U.S. Department of the Interior
Bureau of Land Management

Prineville District Office
3050 N.E. 3rd Street
P.O. Box 550
Prineville, Oregon 97754

October 2001

Analysis of the Management Situation for the Upper Deschutes Resource Management Plan and Environmental Impact Statement

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

BLM/OR/WA/PL-01/032+1792

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Prineville District Office
P.O. Box 550, (3050 N.E. 3rd Street)
Prineville, Oregon 97754

IN REPLY REFER TO:

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Greetings:

This letter introduces the Analysis of the Management Situation (AMS) for the Upper Deschutes Resource Management Plan and Environmental Impact Statement (RMP/EIS). It prefaces both an Executive Summary and a full copy of the AMS. If you wish a full copy of the AMS, please contact the Prineville District Office at the address listed at the end of this letter.

The AMS compiles in one place important information about existing resource conditions, uses, and demands. It also summarizes the existing management direction, describes the planning criteria that will guide us in preparing the RMP/EIS, explains the preliminary issues (problems), and proposes a range of preliminary alternatives and actions (solutions) we propose to analyze in the RMP/EIS.

Thus far in the process, we have identified nine issue categories that will be addressed in the RMP/EIS. Issues are problems that we cannot solve using management direction provided in existing RMPs. The nine preliminary issue categories are: Land Ownership, Transportation and Access, Land Uses, Ecosystem Health and Diversity, Recreation, Special Management Areas, Archaeological Resources, Public Health and Safety, and Social and Economic Values. The issues are described fully in Chapter 5 of the AMS. These issues came out of internal meetings of BLM specialists and managers, meetings with tribal and local government representatives, calls and letters from the general public received over the last ten years, and public scoping public meetings conducted in 1991, and again in 1994, for the "Urban Interface Plan" (an earlier attempt to amend the existing RMP).

We are asking for your comments regarding this AMS. Specifically, please tell us:

- **Is there new, relevant information or circumstances we have not considered?**
- Are there errors in our descriptions of existing uses or resources?
- Have we accurately expressed the issues (problems) that need to be resolved, or are there others we should address?
- Does the range of preliminary alternatives address the stated issues, or are there other goals we have not considered? What is your vision of a desired future condition that would address one or more issues?
- Are there management opportunities (actions) we have not listed, which would help resolve issues?

There are three ways you can share your comments regarding this AMS: (1) Mail them to our office, (2) Provide them verbally or in writing at one of three public meetings, and/or (3) Participate in an Issue Team

Comments, including names and street addresses of respondents, will be retained on file in the Prineville District Office as part of the public record for this planning effort. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public inspection, or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Mail comments to the following address by , 2001 so that we can consider them as we prepare the RMP/EIS:

Bureau of Land Management
Prineville District Office
Attn: Mollie Chaudet
PO Box 550 (3050 NE Third Street)
Prineville, OR 97754

Public meetings will be held from 7:00 PM - 9:00 PM at the following locations:

Tuesday October 16	Wednesday October 17	Thursday October 18
Redmond High School	Crook County Fairgrounds	La Pine Middle School
675 SW Rimrock	Carrie Foster Hall	16360 1st Street
Redmond, Oregon	590 Lynn Boulevard	La Pine, Oregon
	Prineville, Oregon	

Issue Teams: A third way you can provide input is by participating on an "Issue Team" (see attached application). These will be groups of ten or so people, chartered under the Federal Advisory Committee Act, who will meet one to three times a month between fall 2001 and summer 2003. They will look at the issues in more depth, and help develop the alternatives that will be considered in the Draft EIS. The Issue Teams will be composed of representatives of the general public, specific interest groups, permit holders, other stakeholders, and representatives of relevant government agencies. If you would be willing to serve on an Issue Team, please complete and return the attached application by October 25.

We appreciate your help in this planning effort and look forward to your continued interest and participation. For additional information or clarification regarding this document or the Upper Deschutes RMP/EIS project, please contact Mollie Chaudet at (541) 416-6872. We have also set up a web page (**http://www.or.blm.gov/Prineville/Deschutes_RMP/Home.htm**) where you can find Upper Deschutes planning documents and information about public meetings.

Sincerely,

Robert Towne
Deschutes Field Manager

Issue Team Application

Applications must be postmarked by October 20, 2001

The Upper Deschutes Resource Management Plan will be developed using a community-based collaborative process to help solve important problems facing long-term management of the public lands within the planning area. To accomplish this vision, we will be using what we are calling "Issue Teams" to focus our collaborative efforts.

Issue Teams are a variety of teams that will focus on specific planning issues. The teams will be chartered by the Deschutes Provincial Advisory Committee, and will be composed of representatives of the general public, specific interest groups, permit holders, other stakeholders and relevant government agencies. These teams would provide recommendations to be included in the planning process concerning whether:

- **issues and interests within the scope of the decisions have been adequately recognized and described;**

- **a reasonable range of integrated alternatives have been identified that are responsive to the issues;**

- **consensus on a preferred alternative is possible within the time available.**

Issue Teams members will attend 1-3 meetings per month between Fall 2001 and Summer 2003. Specific schedules will be developed later, but the bulk of the Issue Team work is expected to fall within the first 6-8 months (October, 2001 - May, 2002), with another focused time after the close of the public comment period of the Draft Environmental Impact Statement (Winter 2002-2003). Meetings will be held weekdays whenever possible, but could also be in the evenings or on weekends to accommodate members' schedules. Issue Team members will be selected based on the factors listed below. Issue Team members may serve on more than one Issue Team.

To apply to an Issue Team, please answer the following questions:

1. **What Issue Team(s) are you interested in? Land Use, Transportation and Access, Land Uses, Ecosystem Health and Diversity, Recreation, Special Management Areas, Archaeological Resources, Public Health and Safety, Social and Economic Values**
2. **What interest would you represent? (eg: commercial development, non-commercial recreation, adjacent land owner, grazing permittee)**
3. **Demonstrate how you meet the following selection criteria:**
   a. Personal knowledge of local and regional resource issues and understanding of public land uses and activities.
   b. Knowledge and understanding of diverse cultures, interests, or perspectives.
   c. Ability to communicate orally and in writing.
   d. Willingness to work toward mutually beneficial solutions to complex issues.
   e. Respect and credibility in local communities.
   f. Commitment to attending meetings held throughout the process (please also note any meeting time limitations you have i.e.- can't meet on weekdays, weekends, evenings).

Mail your responses to the above questions to:

USDI Bureau of Land Management, Prineville District
PO Box 550
Prineville, OR 97754

Attention: Mollie Chaudet, Project Manager, Upper Deschutes Resource Management Plan

All applications must be postmarked no later than October 20, 2001 to be considered

Analysis of the Management Situation
Executive Summary

Introduction

The Analysis of the Management Situation (AMS) is the first step in revising the 1989 Brothers/La Pine Resource Management Plan (RMP). That land use plan governs the use, protection, and enhancement of resources on public land it manages in central Oregon, and is now largely obsolete for the western half of the plan's area. The 1989 RMP failed to anticipate issues related to the rapidly growing human population in Bend, Redmond, Prineville, and surrounding areas. The combination of changed circumstances and new information that have driven a need to revise the existing RMP are described in more detail in Chapter 1. The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to develop and periodically update Resource Management Plans (RMPs) that guide land management actions on BLM managed lands.

The Prineville District BLM has begun the process of revising the land use plan for the area, to be called the Upper Deschutes RMP. This RMP will establish broad-scale desired conditions, goals, objectives, standards and guidelines for the management of the BLM administered lands and resources within the planning area. The Upper Deschutes RMP will also amend a portion of the Two Rivers RMP.

The purpose of the AMS is to summarize the existing situation, explain the need for change (preliminary issues), and propose a range of management opportunities (preliminary alternatives). The AMS is required to provide a starting point to describe the biological, physical, social and economic components of the environment that would be affected by the decisions made as a part of the proposed Upper Deschutes RMP. The AMS will serve as the basis for the RMP and associated Environmental Impact Statement (EIS).

Table E1 summarizes the preliminary issues, decisions that will be made, and the preliminary alternatives that are described in more detail throughout the AMS.

Geographic Scope of Planning Area

The "planning area" covers approximately 885,883 acres of public and private land in two separate blocks in central Oregon. The northern area is in Crook, Deschutes and Jefferson counties, and is located between Sisters on the west, Lake Billy Chinook on the north, Prineville Reservoir and State Highway 27 on the east, and Pine Mountain and Bend on the south. The southern area, also called the La Pine area, encompasses La Pine, in southern Deschutes and northern Klamath counties. Overall, 49 percent of the land in the planning area falls in Deschutes county, 44 percent in Crook, 2 percent in Jefferson, and 5 percent in Klamath.

The Upper Deschutes RMP includes about 36% of the total area considered in the 1989 Brothers/La Pine RMP. Map 1A shows the area to be covered by the Upper Deschutes RMP. Boundaries for the planning area are based on the need for changing the existing plan. The boundaries include the public lands most affected by the rapid growth in the areas of Bend, Sisters, Redmond, Prineville, and La Pine. Map 1-Land Ownership Status provides a more detailed view of the planning area and also graphically displays the land ownership in the planning area and adjacent areas.

The eastern portion of the Brothers/La Pine RMP area is not included in the current planning area because the growth and use pressure issues driving the need for change have had only minor effects on lands east of the planning area. Bend and Sisters are not included within the planning area, but all of the BLM managed public land nearby is. The urban center of Madras is not included in the planning area, nor is most of the BLM managed land nearby. While the issues adjacent to Madras are similar to those in the planning area, the Madras area was not included because the BLM expects to address this area and others in a separate RMP to be initiated within a few years.

Segments of the Middle Deschutes and Lower Crooked Wild and Scenic Rivers, and the Badlands Wilderness Study Area (WSA) have existing management plans governing resource management within those areas. The BLM managed lands within these areas are included in the planning boundary, and the existing management plans will be incorporated by reference into the Upper Deschutes RMP. However, the existing plans will not be revised during this RMP process, though some minor amendments and further plan maintenance could result in order to address transportation and access issues.

The planning area boundary includes a variety of other land ownerships besides BLM managed public land. There is also land owned by private parties, counties, and the state, and public lands managed by other federal agencies. However, this RMP will only make decisions for the BLM managed lands, excluding that land falling in Wild and Scenic River boundaries. Exceptions will be made if, through the collaborative planning process, those jurisdictions having specific authorities over other lands within the planning area choose to make joint decisions as a part of this process (see also Chapter 6, Collaborative Planning).

Collaborative Planning

The BLM is committed to a community-based planning process that respectfully considers the diverse opinions and needs of local, regional, and national interests. To use this kind of approach, a variety of stakeholders must be represented to help identify the issues, develop a range of alternatives, and to have input as to how the plan, once completed, can be implemented. Pulling all of the interests and jurisdictions together efficiently and effectively, while providing an open and sharing public process presents numerous challenges. Other jurisdictions also have opportunities for cooperative decisions associated with this planning process. The collaborative planning framework described below offers an opportunity for that to occur.

The collaborative planning framework described here, and illustrated in Figure E2, is designed to allow for inter-government and general public interaction to help resolve issues identified for the planning area. An intergovernmental interdisciplinary team will work together to help clarify issues and design alternatives to address those issues. The Deschutes Provincial Advisory Committee (PAC), a chartered Federal Advisory Committee, will charter a subcommittee of its members and a number of working groups - called Issue Teams - representing a cross section of the general public. The Issue Teams will provide advice to the

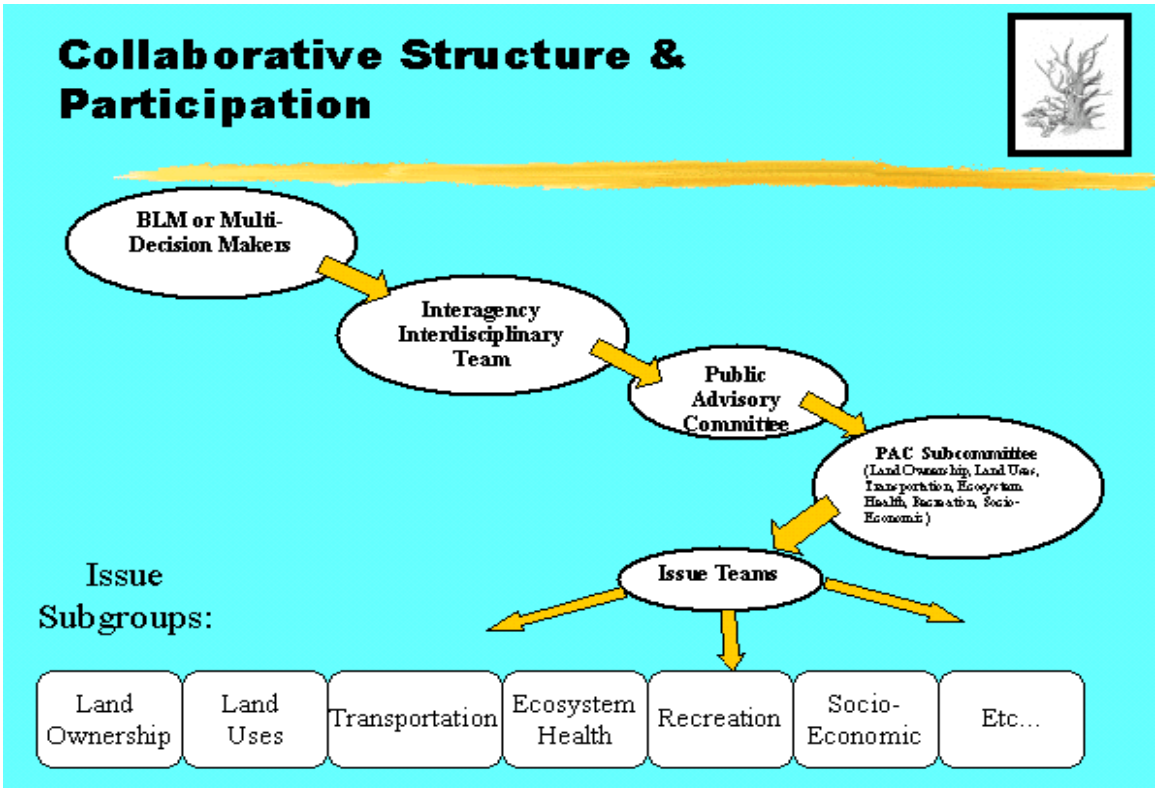

Figure E2: Collaborative Structure and Participation

intergovernmental interdisciplinary team about the issues to be addressed, and possible ways to resolve those issues within the scope of the decisions to be made. Below is a brief description of the expected duties of each of the Issue Teams.

BLM or multi-agency decision-makers - federal or other partners that have legal authorities to make decisions over affected lands (Cooperators).

Interagency Interdisciplinary Team - Intergovernmental Team primarily responsible for producing staff work, including analyses, for decision-makers on the integrated components of the plan.

PAC Subcommittee - members of PAC that review the work of and/or participate on Issue Teams and provide subsequent recommendations to the PAC on advice that should be transmitted to the BLM within the scope of the Issue Teams charter.

Issue Teams - a variety of teams focusing on specific planning issues and composed of representative members of the general public, specific interest groups, permit holders, other stakeholders and relevant government agencies willing to work together to achieve the purposes of the team charter. These teams would provide recommended advice to the PAC Subcommittee and thence to the BLM regarding:

- whether issues and interests within the scope of the decisions to be made raised by the public have been adequately recognized and described;
- development of a reasonable range of integrated alternatives that are responsive to the issues and within the scope of the decisions to be made;
- whether consensus on a preferred alternative is possible within a given period of time.

The teams would work together on a consensus basis to meet these charges, with frequent opportunities for the general public to review and comment on the nature of the work as it progresses. The teams could include "sub-teams" that work on specific geographically-oriented issues (e.g., land ownership patterns in a specific sub-watershed) in order to make sure that issues are addressed at the appropriate scale. The charge of the subteams may be to look at one area potentially affecting another area, while the Issue Team's responsibility would be to integrate those ideas into the "big picture."

Products and Timeline of the Planning Process

Figure E3 illustrates the products and proposed timeline for the planning process. The following summarizes and defines those products.

The Upper Deschutes Resource Management Plan (RMP) - prepared in accordance with a number of laws and regulations (see also Chapter 2), but will primarily follow the process prescribed by the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA). These procedural and substantive laws provide the basis for the planning process and the products that will be produced as a result of this effort.

Analysis of the Management Situation (AMS)- describes the existing condition of the planning area, the scope of the decisions to be made by the RMP, the preliminary issues and alternatives, and the collaborative planning process to be used. There will be a 60 day comment period on the AMS.

Draft Environmental Impact Statement (DEIS)- builds on the AMS and identifies a range of alternatives that meet the purpose and need for action and address issues within the scope of the decisions to be made. The DEIS will analyze the environmental consequences of implementing the alternatives, and identify a preferred alternative. There will be a 90 day comment period on the DEIS.

Final Environmental Impact Statement and Proposed Management Plan (FEIS)- based upon comments on the DEIS and Preferred Alternative, the FEIS will modify the range of alternatives, including the preferred alternative, and/or the environmental consequences. The Proposed Management Plan will include a more detailed description of the preferred alternative. The FEIS and Proposed Management Plan will have a 30 day public comment period, during which protests to the proposed decision may be filed with the BLM State Director.

Record of Decision and Final Management Plan (ROD) - ROD will formally present the rationale for the selected alternative, including the BLM State Director's response to any protests filed as a result of the Proposed Management Plan. The final management plan will include goals, objectives, and standards for the selected alternative, as well as an implementation and monitoring plan.

The AMS Contents

The AMS is organized as follows:

Chapter 1 - Purpose and Need
Describes the need for change to the Brothers/La Pine RMP and the geographic scope of the planning area

Chapter 2 – Legal Mandates
Listing of the laws and previous policy decisions providing a context for the types of decisions that must be made in an RMP. Specific Plan decisions are also summarized in table E1.

Chapter 3 – Area Profile
Describes the physical, biological, social, and economic components of the planning area based on information available at the time of publication.

Chapter 4 – Existing Management Direction
Describes of the current direction for resource management in the planning area. This information, combined with information presented in previous chapters, helps form the framework for developing the proposed management opportunities.

Chapter 5 – Preliminary Issues, Alternatives, and Management Opportunities
Describes the preliminary issues and management opportunities, including a range of actions and associated outcomes which will be analyzed in the RMP. These are also summarized in table E1.

Chapter 6 – Collaborative Planning
Summary of the collaborative planning process and a projected time-line for completion of the RMP and associated planning and decision steps.

Figure E3: Products of the Plan

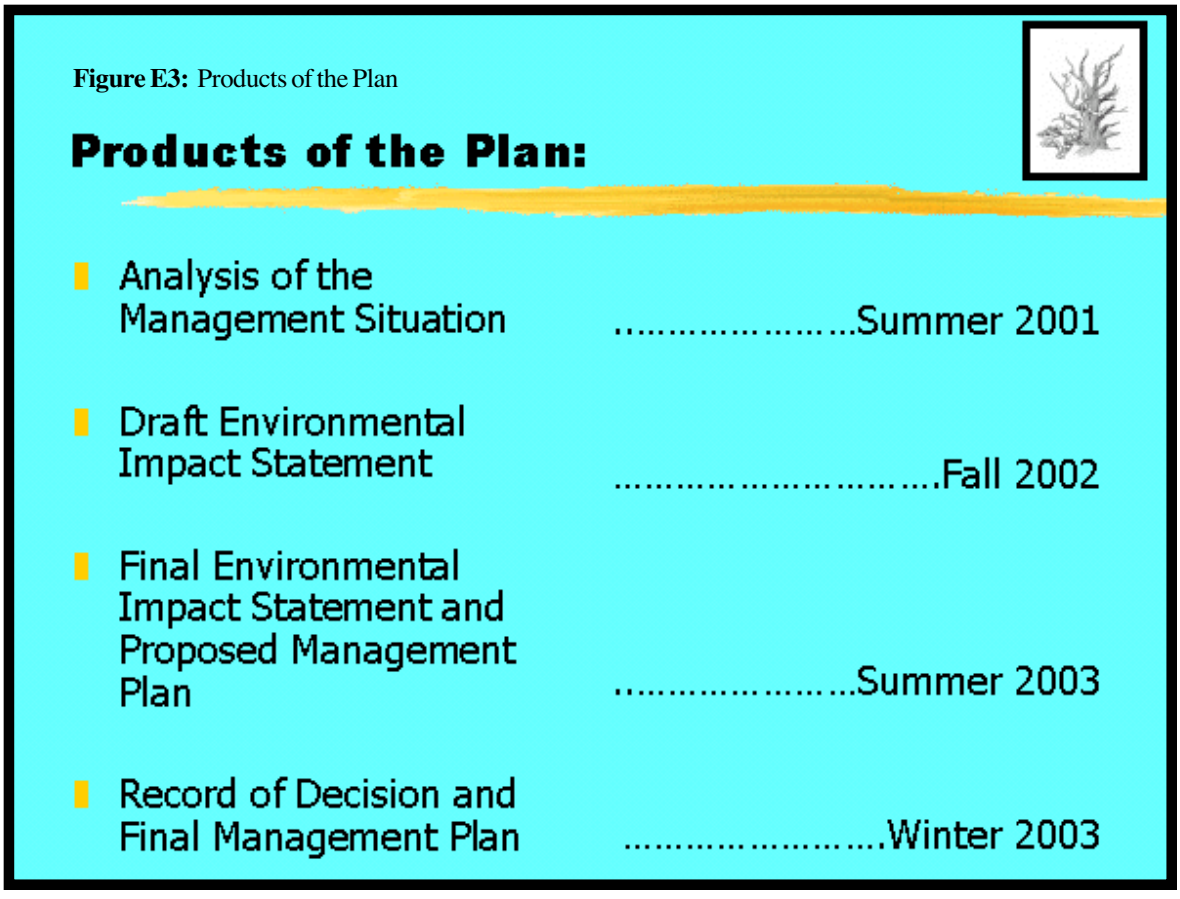

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Land Ownership	Population growth in central Oregon has created increasing demands on both private and public lands: • Isolated private parcels surrounded by blocks of public lands are being more intensively developed than in the past. • Urban development is beginning to surround small, isolated blocks of public lands. This affects the ability of these lands to provide wildlife habitat or other public benefits. • Public lands are increasingly desirable as a source of land for urban growth and infrastructure to support growth. • Increase in development of private lands, and increased recreational or casual uses on public lands affects the ability of permittees to effectively or economically manage grazing allotments. • In some cases private land ownership blocks public access public lands. • Land ownership status can affect management of natural resources such as minerals or ground and surface water and less tangible resources like scenery, open space, and wildlife habitat.	Determine the desired location and arrangement of BLM managed lands in the planning area. The RMP will identify: • Lands available for disposal • Criteria for land acquisitions • Proposed withdrawal areas, and • Lands available for sales or leases	Examine a range of desired conditions for land ownership patterns that would make public land available for sale, exchange, or lease: • for community growth and infrastructure adjacent to major population centers; • for community or rural residential recreation and open space; • to block up public or private ownership for improved efficiency; • to maintain or improve wildlife habitats and populations for all life stages. Examine conditions/criteria for the acquisition of private parcels and the retention or transfer of ownership of public land parcels including identifying areas or parcels of lands that would be priorities for acquisition.
Transportation and Access	**Regional Transportation Systems** BLM managed lands are increasingly being identified as necessary or desirable locations for transportation corridors. Regional transportation includes both inter-county or intra/interstate transportation.	**Regional Transportation Systems** Determine the desired location and arrangement of regional transportation infrastructure within BLM managed lands across the planning area. Identify areas suitable for right-of-way corridors expansion, avoidance, and exclusion areas.	**Regional Transportation Systems** Examine the suitability of areas to provide for new or relocated regional transportation corridors and/or improvements within existing corridors considering tribal, federal, state and local government needs, wildlife habitat fragmentation, and effects on public land users.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
Transportation and Access (continued)	**Local Transportation Systems** Local transportation involves intra-county transportation or primary access points to public lands sites. • In some areas more access roads lead into public lands than is necessary for public access. • Entry and exit to these roads are frequently unsafe and risk of accidents increases as traffic increases. • In some areas, access to public lands requires trespass across private lands. • Some blocks of BLM managed public lands within the planning area have been closed to motorized use through "emergency" closures which have gone beyond the emergency closure period. • Motorized uses adjacent to developed private lands have resulted in complaints about unmanaged transportation networks on BLM managed lands. • Road maintenance on BLM managed lands may not be sufficient to meet changing standards for public safety needs for evacuation of subdivisions or communities during fires.	**Local Transportation Systems** Determine the desired location and arrangement of local transportation infrastructure within BLM managed lands across the planning area. Establish criteria for determining appropriate road densities based on uses and values.	**Local Transportation Systems** The range of alternatives will examine local roads within the planning area, focusing primarily on the BLM managed primary arterial and collector transportation system, but also on local transportation corridors needed to address growth and capacity concerns by local communities. The alternatives will identify conditions and/or criteria by which BLM managed roads not classified as part of the primary system would be evaluated in the future to determine whether they would be included into the transportation system. The range of alternatives will also examine long-term desired conditions for integration with local and regional transportation systems under other jurisdictions
	Rights of Way and Easements The BLM is required under law to provide access to private in holdings if no other access is available. County zoning regulations, safety requirements, and historic rights can influence which of rights-of-ways the BLM considers. Private in-holdings are likely to be developed to the extent permitted by zoning, thus requiring multiple grants of new rights-of-way.	**Rights of Way and Easements** Establish guidelines for the granting of rights-of-way to private land inholdings.	**Rights-of-Way and Easements** The alternatives will examine desired conditions for rights-of-way grants to complement existing and projected local and regional transportation system and other needs. The range of alternatives will examine criteria under which easements through private lands to access public lands would be sought, and identify likely parcels for easement acquisition.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Transportation and Access (continued)	**Utility Corridors/ Communication Sites** The demand for electricity, natural gas, and other energy sources and new forms of digital communication is expected to continue to increase. At the same time, an increased awareness and importance of scenic values has created conflict over the siting of communication or utility structures. Utility corridors, because of their linear nature and relatively easy vehicular access, also attract off-road driving activities, illegal dumping, and vandalism to utility structures		**Utility Corridors/ Communication Sites** The alternatives will examine the conditions under which utility corridors would be managed, expanded or designated considering energy, communication, domestic water, sewage and related access needs, and noxious weed potential. The alternatives will also examine long term desired conditions for vegetation, and examine suitable locations for new corridors or sites considering factors such as ACECs, cultural, geologic, scenic, aesthetic, or other public values.
Land Uses	**Visual Resources** Development within the planning area is expected to increase the variety of applications for permits for activities that may affect visual resources. The Brothers/La Pine RMP does not address public viewsheds or viewpoints that have developed within the past 10 years, nor does it address new policy for visual quality objective designations within Wilderness Study Areas. **Areas of Traditional Cultural Significance** These areas are places where local Indian people hunt, fish, pasture livestock, collect roots, berries, medicinal herbs or plants, and practice traditional religious beliefs. In some cases, the use of these areas is protected by existing legal rights, treaties, and other means. These areas can be affected by management actions such as road gating or rehabilitation, weed control, fire management, recreational improvements and land disposal.	**Visual Resources** Designate areas into one of four Visual Resource Management classes. **Areas of Traditional Cultural Significance** Establish long-term desired vegetative conditions for important cultural use areas, and establish criteria for determining allowable activities and access to those areas.	**Visual Resources** The RMP will examine different visual quality objective designations for BLM managed lands within the planning area. **Areas of Traditional Cultural Significance** The range of alternatives will examine conditions for local American Indian Tribes to freely participate in activities on public lands that are of traditional cultural significance.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
Land Uses (continued)	**Minerals** The growth of the communities in central Oregon have led to an increased demand for the use of mineral resources, particularly crushed aggregate, within the region. Local communities and State agencies have looked to BLM managed lands within the planning area to meet this demand. Local residents and recreational users have objected that the dust, noise, increased traffic of mineral extraction can adversely affect the scenic or recreational values of the lands. **Commercial Forest Use** An insect epidemic and subsequent salvage harvest has changed the forest structure, habitat, and fuels profile in the La Pine portion of the Brothers/La Pine RMP since the RMP was completed in 1989. The Brothers/La Pine RMP does not reflect projected commercial forest product outcomes based on a comprehensive, ecosystem approach that considers biodiversity, special status plant or wildlife habitat, general habitat connectivity, the role of old growth juniper, scenic values, or strategies for continued urban interface fuels treatments and insect and disease management.	**Minerals** Identify areas as open or closed to operation of the mining laws, mineral material disposal, and nonenergy leasing, consistent with the goals, standards, and objectives for natural resources within the planning area. In open areas, identify any area-wide terms, conditions, or other special considerations needed to protect resource values. **Commercial Forest Use** Identify the desired future condition for forest/woodland types found within the planning area, and identify management actions and associated best management practices that can be applied to help us meet desired future conditions.	**Minerals** The range of alternatives will examine the conditions under which mineral extraction would be permitted or withdrawn (consider factors including conflicts with recreation, residents, scenic, cultural, geologic or other values). The alternatives will also examine the criteria for site rehabilitation or change in land ownership. **Commercial Forest Use** The alternatives will examine the conditions under which conifer forests could be managed to promote healthy ecosystems, a safe environment for residents, regionally important old-growth species in the central Oregon landscape and provide marketable or beneficial forest products. Alternatives will be integrated with the “Ecosystem Health and Diversity” alternatives

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Land Uses (continued)	**Livestock Grazing** Increased urban development next to public land and increased recreational and other uses on public land have led to conflicts between these uses and public land livestock grazing. Concerns vary from safety issues (stray cattle on busy public roads) to aesthetics ("cowpies" at popular recreation areas or next to private land) to economics (labor costs to continually check gates in popular recreational areas). Visitors to public land sometimes leave gates open, cut fences, shoot or otherwise damage troughs or pipelines, or harass, rustle, or kill livestock. Some individuals and groups have asked the BLM to consider eliminating grazing in specific areas.	**Livestock Grazing** Determine areas where livestock grazing (or other uses) will or will not be allowed, or where seasonal restrictions may need to be applied, using criteria developed in the planning process. Where information is not currently available to determine open/closed areas, the plan will guide subsequent plan amendment decisions regarding levels of permitted grazing use, and provide guidelines for allotment-specific implementation decisions regarding season of use, range developments, and other livestock grazing management practices.	**Livestock Grazing** The alternatives will examine a range of "conflict" thresholds, with the goal of reducing conflicts between livestock grazing and other uses and activities on or adjacent to BLM managed land within the planning area. Some of the alternatives will lead to actions that reduce or eliminate livestock grazing to reduce conflicts, while other alternatives will result in changes to other uses or activities. The desired conditions will span a range of levels of conflict between uses and users and would identify criteria to determine which uses or actions need to be modified.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
Land Uses (continued)	**Long Term Leases and Temporary Land Use Permits** The District receives numerous requests for temporary use authorizations for activities such as photography, commercial filming, or educational purposes. There is no current procedure for streamlining these requests nor does the Brothers/La Pine RMP identify areas where these activities may be preferred or discouraged based on other resource needs. *Oregon Military Department and National Guard* Military training was established by the US Army in the late 1930s. The Oregon Military Department (OMD) and National Guard currently have a permit to carry out training exercises on the BLM-managed lands adjacent to the Biak Training Center just south and east of Redmond. There is an increasing demand for other uses in this area that may reduce the area available to the military to meet their purposes. **Unauthorized Occupancy and Use** Unauthorized or illegal uses can result in damage to natural resources that require restoration. Some unauthorized occupancy and use of BLM managed lands is a result of a lack of clearly identified boundaries. The Brothers/La Pine RMP provides limited guidance for developing a standardized approach for restoration of resource damage.	**Long Term Leases and Temporary Land Use Permits** Determine the long term desired condition and set criteria, when appropriate, for where and under what circumstances land use authorizations such as major leases and land use permits may be granted. *Oregon Military Department and National Guard* Determine what types of military activity are desired in which locations on BLM managed land in the planning area. Establish criteria for deciding how to resolve conflicts between military and other uses or activities. **Unauthorized Occupancy and Use** Identify the desired level of protection from and response to these illegal activities. Determine whi BLM actions could prevent unauthorized occupancy and use. Decide how to prioritize which areas will receive implementation emphasis.	**Long Term Leases and Temporary Land Use Permits** The alternatives will examine conditions for a smooth and timely process to obtain permits or leases in areas where requests are often concentrated and granted. *Oregon Military Department and National Guard* The alternatives will examine a variety of conditions under which continued military uses of the planning area would be permitted. This would include criteria by which either the military or other uses within their permit area could be altered to reduce or eliminate conflicts between users. **Unauthorized Occupancy and Use** The alternatives will examine long-term desired conditions to prevent trespass and to prioritize, and, where possible, standardize site restoration techniques to be used.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Ecosystem Health and Diversity	**Water Quality and Quantity** Some rivers and streams within the planning area, have been listed by the Oregon Department of Environmental Quality (ODEQ) as water quality limited This listing occurred after completion of the Brothers/La Pine RMP and the concerns have not been addressed Juniper stands in densities and locations outside of their range of historic variability, as well as activities such as off-road vehicle use, grazing, and horseback riding may reduce ground cover, create ruts, and/or compact soils. As a result, overland flow is increased and can cause erosion and shorter flow durations in intermittent streams. **Vegetation** Increasing urban development and human impacts have resulted in the fragmentation of old-growth juniper woodlands in Central Oregon. Old-growth juniper woodlands are important for wildlife habitat, biological diversity, and scenic values.	**Water Quality and Quantity** Identify desired future conditions for water quality and quantity within the planning area. Incorporate standards or goals under the Clean Water Act and as a result of the Water Quality Restoration Plan process. Identify criteria or thresholds for determining watersheds that may need special emphasis because of human health concerns, aquatic or upland ecosystem health, or public uses. **Vegetation** Identify desired future conditions for vegetative resources, including the desired mix of vegetative types, structural stages, landscape and riparian functions, and habitat for native plants, fish, and wildlife. Designate priority plant species and habitats, including Special Status Species and populations of plant species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age. Determine the location and arrangement of lands that will emphasize native wildland habitats and processes, and wildlife habitat connectivity between BLM managed and National Forest lands, and uplands and riparian areas.	**Water Quality and Quantity** Alternatives that are designed to protect and enhance water Quality and Quantity are found primarily under alternatives for managing vegetation, grazing, and recreation. **Vegetation** The range of alternatives will examine a variety of conditions that would restore and support healthy ecosystems in conjunction with expected population levels and human uses, wildlife habitat needs, and economic reliance of the population on public lands.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
Ecosystem Health and Diversity (continued)	**Fire Management** Ecosystems within the Upper Deschutes Planning Area have evolved over time in response to periodic fire disturbance, and sustainable ecosystems are in balance with the inherent frequency, size and severity of the natural disturbance cycle. Many acres within the planning area have missed one or two disturbance cycles due to fire suppression. The vegetative response to this disturbance deficit is a change in species presence or prominence, and fuel quantity and continuity. The Brothers/La Pine RMP does not fully consider the habitat needs of newly established special status or emphasis species such as sage grouse and other sagebrush obligates. Human expansion and increased recreational use have added new emphases on ecosystem sustainability and health, and the previous risk classes may no longer be representative of the conditions in the planning area.	**Fire Management** Classify lands into the following categories: (a) Areas where wildland fire is not desired at all, (b) Areas where unplanned fire is likely to cause negative effects, but these effects can be mitigated or avoided through fuels management (e.g., prescribed fire), prevention of human caused fire, or other strategies, (c) Areas where fire is desired to manage ecosystems but where there are constraints because of the existing vegetation condition (i.e., more substantial non-fire fuels treatments may be necessary prior to use of prescribed fire in areas of heavy fuel loads), and (d) Areas where fire is desired, and where there are no constraints associated with resource conditions or social, economic, or political considerations	**Fire Management** The range of alternatives will examine the conditions under which fire would play a role in ecosystem management, the role of human disturbances, and the historic role of natural disturbances. The alternatives will utilize results of the on-going joint water quality restoration/total maximum daily load plan being prepared with ODEQ and the Forest Service.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Ecosystem Health and Diversity (continued)	**Wildlife** BLM managed public land in the planning area provides a variety of wildlife habitat components. It may provide important habitat connectivity between the Deschutes and Ochoco National Forests and the Little Deschutes, Deschutes, and Crooked River systems. There is potential habitat for species such as the bighorn sheep, which once populated portions of the planning area. In the process of urban expansion, habitat connectivity can be reduced or eliminated, affecting genetic exchange between populations. Reductions in effective habitat increases the importance of remaining suitable habitat. Conversion of private land from native dry-land shrubs to irrigated agricultural or rural residential uses provides an increase in the forage base and water sources for some species.	**Wildlife** Work in close coordination with State wildlife agencies to describe existing and desired population and habitat conditions to support a wide variety of game and nongame species. Designate priority species and habitats, including Special Status Species, and populations of wildlife species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age; and identify actions or restrictions on uses needed to achieve desired population and habitat conditions.	**Wildlife** Alternatives to protect and enhance wildlife will be displayed under vegetation, minerals, and recreation.
Recreation	**Developed Recreation** Campgrounds along the Crooked River south of Prineville provide the only fully developed BLM managed sites within the planning area. Sites near water, such as Mayfield and Reynolds Ponds, or trailhead or staging areas for OHV trail systems are partially developed. Other sites operated under permit or lease by other providers, such as the La Pine State Recreation Area, shooting ranges or golf courses, also meet demands for developed facilities within the planning area. The Brothers/La Pine RMP does not provide guidance or management policy for identifying conditions under which developed sites could be pursued by either BLM or through other permit or lease mechanisms to meet resource protection and public demand needs.	**Developed Recreation** Decisions will include the type, location, and arrangement of recreation facilities	**Developed Recreation** The range of alternatives will examine the long-term desired conditions under which developed recreational facilities on BLM managed lands would be considered with regard to projected recreation preferences and levels of use, protection of resources affected by dispersed uses, facilities provided by other recreation providers in the area, and the overall role of BLM-managed land in providing developed recreation experiences. The plan will examine long-term desired recreational settings at existing developed sites such as Mayfield and Reynolds Ponds.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
	Some BLM lands in the planning area are adjacent to heavily used State Park units, such as Smith Rock State Park. The BLM and the State Park manage these adjacent lands differently though the boundaries between jurisdictions are not clearly marked. This situation has led to visitor confusion and resource damage.		
Recreation (continued)	**Motorized Use** OHV use has increased in the planning area. The Brothers/La Pine RMP provided some direction for future clarification of OHV policy in "limited" areas. Many of these areas with "limited" classification in the Brothers/La Pine RMP did not undergo any further planning, and have remained open for unmanaged OHV use. Unmanaged OHV use has resulted in: • Conflicts between recreationists and landowners. • The spread of additional roads and trails within the planning area, resulting in impacts to wildlife, soils and plants. Winter riding opportunities at existing trail systems are limited by seasonal closures to minimize disturbance to wildlife, leaving many recreationists without opportunities or dislocating them to undesignated and unmanaged areas. Some small isolated parcels within the planning area are classified as "open" to OHV use, are not legally accessible to the public. OHV use on some small "open" parcels have resulted in repeated complaints from adjacent landowners.	**Motorized Use** Designate areas as "open," "limited," or "closed" to OHVs. Establish criteria by which motorized road and trail densities can be developed for specific areas. Decision will include the type, location, and arrangement of recreation facilities to support the selected level of OHV use. The Final Decision in this Plan will be based on consideration of an Environmental Impact statement that meets the requirements of the Central Oregon Forest Committee v. Kenna, Civil No. 98-29-ST (D. Or.), litigation decision.	**Motorized Use** The range of alternatives will examine the long term desired conditions for areas within the planning area that would be "open," "limited," or "closed" to OHV use. The alternatives will examine conditions where joint or segregated motorized and non-motorized uses would be considered into the future, and the conditions under which those activities would be conducted.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Recreation (continued)	**Non-Motorized Dispersed Use** Non-motorized dispersed use includes trail-oriented uses such as hiking, running, horseback and mountain bike riding, and other dispersed uses such as rock climbing, rock hounding, hunting and target shooting. Issues associated with these uses include: • Conflicts between trail users. • New user-created trails are being developed without consideration of recreation and land use goals. • Current mandates for the use of the Millican Valley OHV area limits trail system use by mountain bikes to the OHV trail system, eliminating options for single track mountain bike experiences in that area. The Brothers/La Pine RMP does not provide guidance for the development and maintenance of non-motorized trails. There have been proposals by the county for regional trail systems that would depend upon trail alignments on BLM managed lands.	**Non-Motorized Dispersed Use** Designate areas available or not available to each type of dispersed use. Establish criteria that can be used to determine the desired level of development/designation for each use, prioritize implementation, and decide which use(s) will be modified and how when conflicts arise.	**Non-Motorized Dispersed Use** The range of alternatives will examine long-term desired conditions for providing a variety of dispersed, non-motorized uses across the planning area considering resource protection needs and recreation demands within specific areas. The range of alternatives will identify criteria under which trail systems would be developed and designated, or where dispersed activities would be encouraged without the use of developed trail systems
	Special Recreation Permits Special recreation permits (SRPs) are issued for commercial recreational activities or large group events. Population growth and increased visitation/awareness of BLM managed public lands has resulted in increasing numbers of requests for SRPs. These permit requests include annual or multi-year permits for outfitter/guides (flyfishing, nature hikes, equestrian trail rides, etc.) and for single day events (photo shoots, filming, group events, concerts, OHV and mountain bike races, etc.).	**Special Recreation Permits** See: Long Term Leases and Temporary Land Use Permits	**Special Recreation Permits** Examine different criteria for allowing commercial or non-commercial permitted and authorized recreational activities. Criteria for considering group activities will include: • Provide a needed service not available on private lands; • Support tourism and economic development; • Be compatible with other public land uses and resources; • Maintain public health and safety

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
Special Management Areas	**Areas of Critical Environmental Concern (ACECs)** The Brothers/La Pine RMP identifies a number of ACECs but does not identify any that are based on old growth juniper or visual resource characteristics. There has been public interest in placing some special area designations on unfragmented blocks of old growth juniper. As with many of the public lands in the area, increased growth increases the recreational and other casual uses within existing ACECs. The Brothers/La Pine RMP did not provide direction for conditions under which new ACECs could be established or existing ACECs could be expanded or reduced in response to new information or changed circumstances.	**Areas of Critical Environmental Concern (ACECs)** Identify the long-term desired condition, distribution and location of areas with special management emphasis. Such areas may contain unique or representative vegetation, geologic, wildlife, scenic, recreational, or cultural values. Recommend, as appropriate, areas for designation as National Conservation Areas, National Wild and Scenic Rivers, National Historic or Scenic Trails, or National Recreation Areas.	**Areas of Critical Environmental Concern (ACECs)** The range of alternatives will consider: • Designation of new ACECs that meet the criteria • Review existing ACECs for changes in boundaries to better protect or interpret key resources or to enable recreational use • Consider management guidelines for existing and proposed ACECs. • Examine criteria for implementing actions and a range of possible actions based on existing conflicts or concerns. • Identify opportunities to develop public education and interpretation strategies. • Review existing ACEC proposals for Alfalfa Market Road, Columbia Southern Irrigation, Juniper Woodland, and Smith Rock.
	Caves Many of the caves located within the planning area are being managed under "emergency closures." Some of these emergency closures will expire in the near future. Increased population growth in the area has resulted in more cave visitors. The popularity of rock climbing in caves, and the likelihood of new cave management policies in adjacent national forests may affect future use and management needs at BLM managed caves.	**Caves** Designate which activities and uses will be allowed in and around caves. Determine actions necessary to protect cave resources, and prioritize implementation of these actions.	**Caves** The range of alternatives will: • Examine criteria to determine conditions for public use and access in and around caves. • Consider the location and public and resource values associated with the caves and appropriate jurisdictional responsibilities for each cave.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan			
Issue Category	**Preliminary Issues**	**Decisions**	**Preliminary Range of Alternatives**
Special Management Areas (continued)	**Wilderness Study Areas** Interim travel management policy within the Wilderness Study Areas is not always clearly understood by users or other agencies, resulting in sometimes inappropriate or uncoordinated activities within those areas. Motorized uses within the Badlands WSA is specifically limited to the interim policy by Court order (see Area Profile - Millican Valley OHV, Chapter 3). Non-motorized uses are increasing, and the Brothers/La Pine RMP does not address management of those uses. Requests for commercial uses within the WSAs are increasing, and the Brothers/La Pine RMP does not identify clear guidelines for prioritizing or permitting those activities (see also Land Uses - Temporary Uses, Chapter 5).	**Wilderness Study Areas** Designate Wilderness Study Areas to be managed under current interim management policy; and review undesignated river segments for eligibility for inclusion in the National Wild and Scenic River System.	**Wilderness Study Areas** The range of alternatives will: • Examine long-term desired conditions for motorized and non-motorized use • Develop criteria under which actions to maintain Wilderness suitability would be taken • Determine what actions could be taken to maintain Wilderness suitability.
Archeological Resources	Currently, uncontrolled use of public lands is the most immediate and pervasive threat to archaeological resources. Increased visitation often results in intentional or inadvertent damage to archaeological resources due to collection, vandalism, and other disturbances. In addition to a rise in recreational use, authorizations for rights-of-ways, mining, public facilities, habitat improvements, land exchanges, urban growth and other legitimate and necessary uses of the public lands have increased. Those uses will continue to result in an ever-diminishing archaeological resource base, even when data recovery or other forms of mitigation are employed.	Establish long-term desired conditions for archaeological resources. Identify restrictions that may affect the location, timing, or method of development or use of other resources in the planning area. Identify measures to pro-actively manage, protect, and preserve cultural and heritage resources and areas of traditional cultural significance.	The range of alternatives will examine conditions under which archaeological resources can be managed pro-actively considering their scientific, sociocultural, educational and recreational values.

Table E-1. Summary of Issues, Decisions, and Alternatives in the Upper Deschutes Resource Management Plan

Issue Category	Preliminary Issues	Decisions	Preliminary Range of Alternatives
Public Health and Safety	Increasing population densities in the central Oregon area have resulted in a growing number of situations that have the potential to affect public health and safety. These include such things as fire management, illegal dumping that can include hazardous materials, shooting, and increased collisions livestock and vehicles. Most of these issues overlap other issues discussed previously.	Identify conditions that can lead to public health and safety concerns, define the BLM's goal for public safety associated with each risk, and determine which BLM actions would produce or prevent unacceptable risks.	The range of alternatives will: • Examine criteria to resolve public safety issues, with an emphasis on potentially life-threatening conflicts. • Consider conditions under which activities such as shooting or campfires would be permitted • Examine fuel conditions by area, considering life and property at risk, ecosystem, and wildlife values. • Involve adjacent landowners in property protection • Identify programs to educate homeowners about fire in the ecosystem.
Socio Economic	The public and stakeholders demand that management of public lands reflect their social and economic values. These values vary from individual to individual, from organization to organization, and from region to region of the nation. Some values may conflict, for example the value of natural resources in their natural setting versus the value of using those resources to meet the society's need for a resource such as aggregate. The BLM planning process must consider these competing values in the planning process.	The final decision will consider the social and economic consequences of all alternatives.	Based on the range of alternatives designed to address the previous issues, the Upper Deschutes RMP will display the social and economic trade-offs between alternatives.

Table of Contents

List of Maps

Chapter 1
Purpose & Need

LEGEND

- BLM State Office
- BLM District Office
- BLM Resource Area Office
- County Boundary
- Upper Deschutes Planning Area

N
W E
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40 0 40 80 Miles

40 0 40 80 Kilometers

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Prineville District

Upper Deschutes
Analysis of the Management Situation
2001

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 1-A: General Location

D07-02-01 : CP

Introduction

This document, the Analysis of the Management Situation (AMS), is the first step in revising the 1989 Brothers/La Pine Resource Management Plan (RMP). That land use plan governs the use, protection, and enhancement of resources on public land it manages in central Oregon, and is now largely obsolete for the western half of the plan's area. The 1989 RMP failed to anticipate issues related to the rapidly growing human population in Bend, Redmond, Prineville, and surrounding areas. The combination of changed circumstances and new information that have driven a need to revise the existing RMP are described later in this chapter. The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to develop and periodically update Resource Management Plans (RMPs) that guide land management actions on BLM managed lands.

The Prineville District BLM has begun the process of revising the land use plan for the area, to be called the Upper Deschutes RMP. This RMP will establish broad-scale desired conditions, goals, objectives, standards and guidelines for the management of the BLM administered lands and resources within the planning area. The Upper Deschutes RMP will also amend a portion of the Two Rivers RMP.

The purpose of the AMS is to summarize the existing situation, explain the need for change (preliminary issues), and propose a range of management opportunities (preliminary alternatives). The AMS is required to provide a starting point to describe the biological, physical, social and economic components of the environment that would be affected by the decisions made as a part of the proposed Upper Deschutes RMP. The AMS will serve as the basis for the RMP and associated Environmental Impact Statement (EIS).

The preliminary issues which led us to this RMP revision almost all stem from the rapidly growing human population in and around the planning area. Issues are problems that we cannot solve using management direction provided by existing RMPs. The Upper Deschutes RMP will provide a means to help us determine which uses are appropriate where, and provide guidance for prioritizing management efforts. Table 1A, at the top of page 4, summarizes the preliminary issues (problems), by category.

Geographic Scope of Planning Area

The "planning area" covers 885,883 acres of public and private land in two separate blocks in central Oregon. The northern area is in Crook, Deschutes and Jefferson counties, and is located between Sisters on the west, Lake Billy Chinook on the north, Prineville Reservoir and State Highway 27 on the east, and Pine Mountain and Bend on the south. The southern area, also called the La Pine area, encompasses La Pine, in southern Deschutes and northern Klamath counties. Overall, 49 percent of the land in the planning area falls in Deschutes county, 44 percent in Crook, 2 percent in Jefferson, and 5 percent in Klamath. Table 1B displays landownership in the planning area by county.

The Upper Deschutes RMP includes about 36% of the total area considered in the 1989 Brothers/La Pine RMP. Map 1A shows the area to be covered by the Upper Deschutes RMP. Boundaries for the planning area are based on the need for changing the existing plan. The boundaries include the public lands most affected by the rapid growth in the areas of Bend, Sisters, Redmond, Prineville, and La Pine. Map 1-Land Ownership Status provides a more detailed view of the planning area and also graphically displays the land ownership in the planning area and adjacent areas.

Table 1A. Preliminary Issues

Land Ownership	There are increasing demands for land for commercial and residential use, as well as urban infrastructure.
Transportation and Access	BLM managed lands are increasingly being identified as necessary or desirable locations for local or regional transportation corridors, or for utility or access rights-of-way, or communication sites. There is an increasing need for reasonable, identifiable, and safe access to and across public land.
Land Uses	Land uses include: Visual Resources, Areas of Traditional Cultural Significance; Commercial Forest Use; Minerals; Livestock Grazing; and Use Authorizations. Conflicts have increased between these users, and there are new concerns about impacts of these uses on other public land uses and resources.
Ecosystem Health and Diversity	There is new emphasis on old-growth juniper, juniper encroachment, sage-brush obligate wildlife species, wildlife habitat connectivity, and ecosystem health.
Recreation	The level and diversity of use has increased, raising concerns about resource impacts, and causing conflicts between recreationists, and between recreationists and other public land uses and adjacent landowners.
Special Management Areas (SMAs)	SMAs include Areas of Critical Environmental Concern, Wilderness Study Areas, and caves. Existing SMAs may need additional protection, and newly recognized resources may need special management protection.
Archaeological Resources	Uncontrolled use of public lands is the most immediate and pervasive threat to archaeological resources. Uses and management activities, including recreation, rights-of-way, public facilities, habitat improvements, land exchanges, urban growth and other legitimate and necessary uses of public lands, have also increased and have the potential to diminish the archaeological resource base.
Public Health and Safety	Increasing population densities have resulted in a growing number of situations that have the potential to affect public health or safety. These include such things as fire management, illegal dumping that can include hazardous materials, shooting, and increased vehicle/livestock collisions.
Social and Economic Values	Management of public lands must be responsive to the social and economic values of the local, regional, and national populace. Some of the various demands may be in conflict, and the BLM will pursue a means to prioritize requests.

The eastern portion of the Brothers/La Pine RMP area is not included in the current planning area because the growth and use pressure issues driving the need for change have had only minor effects on lands east of the planning area. Bend and Sisters are not included within the planning area, but all of the BLM managed public land nearby is. The urban center of Madras is not included in the planning area, nor is most of the BLM managed land nearby. While the issues adjacent to Madras are similar to those in the planning area, the Madras area was not included because the BLM expects to address this area and others in a separate RMP to be initiated within a few years.

Table 1B. Land Ownership/Administration in the Upper Deschutes Planning Area (Acres)

Counties	Crook	Deschutes	Jefferson	Klamath	Total
Bureau of Land Management	120,126	229,335	4,475	21,970	**375,906**
Forest Service and Grasslands	0	154	1,884	0	**2,038**
Other US Agencies	2,779	4,632	0	0	**7,411**
State Administered Lands (estimated)	1,232	11,359	0	0	**12,591**
County Administered Lands	80	10,275	Included as private	Included as private	**10,355**
Private	262,878	178,788	13,994	21,922	**477,582**
Totals	**387,095**	**434,543**	**20,353**	**43,892**	**885,883**

Segments of the Middle Deschutes and Lower Crooked Wild and Scenic Rivers, and the Badlands Wilderness Study Area (WSA) have existing management plans governing resource management within those areas. The BLM managed lands within these areas are included in the planning boundary, and the existing management plans will be incorporated by reference into the Upper Deschutes RMP. However, the existing plans will not be revised during this RMP process, though some minor amendments and further plan maintenance could result in order to address transportation and access issues.

The planning area boundary includes a variety of other land ownerships besides BLM managed public land. There is also land owned by private parties, counties, and the state, and public lands managed by other federal agencies. However, this RMP will only make decisions for the BLM managed lands, excluding that land falling in Wild and Scenic River boundaries. Exceptions will be made if, through the collaborative planning process, those jurisdictions having specific authorities over other lands within the planning area choose to make joint decisions as a part of this process (see also Chapter 6, Collaborative Planning).

Changed Circumstances

Population increases in and adjacent to the planning area since 1989 have substantially changed social and physical conditions. Some of the circumstances that have changed and led to a need to revise the existing RMP include:

1. Population growth in and around the planning area, including accelerated development in areas adjacent to or surrounded by BLM managed land. This has led to:

a. Continued demand for use of public land to support community infrastructures including community recreation, expanded urban growth boundaries, access to newly developed lands, and utility sites;
b. Increased demand for transportation systems to support local growth as well as increased traffic from inter/intra state vehicles;
c. Increased intensity of recreational use on the public lands near population centers; and
d. Conflicts between traditional public land uses such as grazing, hunting, and target-shooting, and newer uses like mountain biking and wildlife viewing.

2. Economic disparity between communities and the changing dynamics of populations and use patterns in the area.

3. Technological innovations in communication which will require new single pole sites and aerial or buried lines in the planning area.

4. Litigation involving the Millican Valley Off-Highway Vehicle (OHV) area. The BLM agreed as a part of a lawsuit settlement to consider the cumulative effects of OHV use in the Millican Valley area during the preparation of the then-named "Urban Interface Plan"[1].

5. An increased number of plant and animal species listed or proposed for listing under the Endangered Species Act.

New Information

In addition to changed circumstances, there is new information that was not available or known when the BLM prepared the Brothers/La Pine RMP. Much of the new information has been provided as a result of the Interior Columbia Basin Ecosystem Management Project (ICBEMP), in a document titled An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins (Quigley and Arbelbide, 1997). New information from this source and others includes:

1. Recent Biological Opinions issued under the Endangered Species Act indicating additional guidance is needed to protect some plants and animals in portions of the planning area (Prineville District BLM records);

2. Downward trends in ecological integrity, based on the condition of soil and vegetation, and perceived impacts from land uses including recreation, grazing, agriculture and urban or rural development (Quigley and Arbelbide, 1997);

3. An increase in fragmentation and loss of plant and animal species diversity or genetic resilience due to loss of connectivity within and between blocks of upland forest, shrub-steppe and riparian habitats (Quigley and Arbelbide, 1997);

4. Noxious weed encroachment and the expansion of juniper and other woody species beyond their historic range of variability (Quigley and Arbelbide, 1997);

[1]The Urban Interface Plan was the name given to the 1994-96 effort to amend the Brothers-LaPine Resource Management Plan.

5. New requirements for plant and animal species habitat (Quigley and Arbelbide, 1997);

6. The importance of late and old seral species, historic disturbance factors such as fire on the landscape, and sustainable use and development on public lands (Quigley and Arbelbide, 1997); and

7. Identification of high priority areas and special emphasis watersheds for restoration activities within the Upper Deschutes basin (Quigley and Arbelbide, 1997)

The AMS Contents

The remainder of the AMS is organized as follows:

Chapter 2 – Legal Mandates
Listing of the laws and previous policy decisions providing a context for the types of decisions that must be made in an RMP.

Chapter 3 – Area Profile
Describes the physical, biological, social, and economic components of the planning area based on information available at the time of publication.

Chapter 4 – Existing Management Direction
Describes of the current direction for resource management in the planning area. This information, combined with information presented in previous chapters, helps form the framework for developing the proposed management opportunities (next chapter).

Chapter 5 – Preliminary Issues, Alternatives, and Management Opportunities
Describes the preliminary issues and management opportunities, including a range of actions and associated outcomes which will be analyzed in the RMP.

Chapter 6 – Collaborative Planning
Summary of the collaborative planning process and a projected time-line for completion of the RMP and associated planning and decision steps.

Chapter 2
Legal Authorities and Decision Framework

Introduction

This chapter briefly describes the legal authorities and planning guidance that provide direction for the BLM land use planning process. These, when combined with the purpose and need for action, establish the scope of the land use plan and set the framework for the decisions to be made in the Upper Deschutes Environmental Impact Statement and Resource Management Plan. The chapter first describes the broad legal authorities that are relevant to the decisions under consideration, then describes the BLM land use planning process and decision guidance in more detail as it relates to the Upper Deschutes Resource Management Plan. Finally, there is a brief description of the decisions that are expected to be made for the Upper Deschutes Resource Management Plan in each of the general Issue categories that were introduced in Chapter 1 and that will be tracked throughout the planning process.

Legal Authorities

A number of Federal statutes have been enacted over time to establish and define the authority of BLM to make decisions on the management and use of resources on public land. Following is a list of major legal authorities relevant to BLM land use planning.

1. The Federal Land Policy and Management Act of 1976 (FLPMA), as amended, 43 U.S.C. 1701 et seq., provides the authority for BLM land use planning.
    a. Sec. 102 (a) (7) and (8) and 103(c) sets forth the policy of the United States concerning the management of BLM lands.
    b. Sec. 201 requires the Secretary of the Interior to prepare and maintain an inventory of all BLM lands and their resource and other values, giving priority to areas of critical environmental concern (ACECs); and, as funding and workforce are available, to determine the boundaries of the public lands, provide signs and maps to the public, and provide inventory data to State and local governments.
    c. Sec. 202 (a) requires the Secretary, with public involvement, to develop, maintain, and when appropriate, revise land use plans that provide by tracts or areas for the use of the BLM lands.
    d. Sec. 202 (c) (9) requires that land use plans for BLM lands be consistent with tribal plans and, to the maximum extent consistent with applicable Federal laws, with State and local plans.
    e. Sec. 202 (d) provides that all public lands, regardless of classification, are subject to inclusion in land use plans, and that the Secretary may modify or terminate classifications consistent with land use plans.
    f. Sec. 202 (f) and Sec. 309 (e) provide that Federal, State, and local governments and the public be given adequate notice and an opportunity to comment on the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for the management of the public lands.
    g. Sec. 302 (a) requires the Secretary to manage the BLM lands under the principles of multiple use and sustained yield, in accordance with, when available, land use plans developed under Sec. 202 of FLPMA, except that where a tract of BLM lands has been dedicated to specific uses according to any other provisions of law, it shall be managed in accordance with such laws.
    h. Sec. 302 (b) recognizes the entry and development rights of mining claimants, while directing the Secretary to prevent unnecessary or undue degradation of the public lands.
    i. Sec. 505(a) requires that "...each right-of-way shall contain terms and conditions which will ... minimize damage to the scenic and esthetic values..."

2. The National Environment Policy Act of 1969 (NEPA), as amended, 42 U.S.C. 4321 et

seq., requires the consideration and public availability of information regarding the environmental impacts of major Federal actions significantly affecting the quality of the human environment. This includes the consideration of alternatives and mitigation of impacts.

3. The Clean Air Act of 1990, as amended, 42 U.S.C. 7418, requires Federal agencies to comply with all Federal, State and local requirements regarding the control and abatement of air pollution. This includes abiding by the requirements of State Implementation Plans.

4. The Clean Water Act of 1987, as amended, 33 U.S.C. 1251, establishes objectives to restore and maintain the chemical, physical, and biological integrity of the Nation's water.

5. The Federal Water Pollution Control Act, 33 U.S.C. 1323, requires the Federal land manager to comply with all Federal, State, and local requirements, administrative authority, process, and sanctions regarding the control and abatement of water pollution in the same manner and to the same extent as any non-governmental entity.

6. The Safe Drinking Water Act, 42 U.S.C. 201, is designed to make the Nation's waters "drinkable" as well as "swimmable." Amendments in 1996 establish a direct connection between safe drinking water, watershed protection, and management.

7. The Endangered Species Act (ESA) of 1973, as amended, 16 U.S.C. 1531 et seq.:
   a. Provides a means whereby the ecosystems upon which endangered and threatened species depend may be conserved and to provide a program for the conservation of such endangered and threatened species (Sec. 1531 (b), Purposes).
   b. Requires all Federal agencies to seek to conserve endangered and threatened species and utilize applicable authorities in furtherance of the purposes of the Endangered Species Act (Sec. 1531 (c) (1), Policy).
   c. Requires all Federal agencies to avoid jeopardizing the continued existence of any species that is listed or proposed for listing as threatened or endangered or destroying or adversely modifying its designated or proposed critical habitat (Sec. 1536 (a), Interagency Cooperation).
   d. Requires all Federal agencies to consult (or confer) in accordance with Sec. 7 of the ESA with the Secretary of the Interior, through the Fish and Wildlife Service and/or the National Marine Fisheries Service, to ensure that any Federal action (including land use plans) or activity is not likely to jeopardize the continued existence of any species listed or proposed to be listed under the provisions of the ESA, or result in the destruction or adverse modification of designated or proposed critical habitat (Sec. 1536 (a), Interagency Cooperation, and 50 CFR 402).

8. The Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq., requires the Federal land management agencies to identify potential river systems and then study them for potential designation as wild, scenic, or recreational rivers.

9. The Wilderness Act, as amended, 16 U.S.C. 1131 et seq., authorizes the President to make recommendations to the Congress for Federal lands to be set aside for preservation as wilderness.

10. The Antiquities Act of 1906, 16 U.S.C. 431-433, protects cultural resources on Federal lands and authorizes the President to designate National Monuments on Federal lands.

11. The National Historic Preservation Act (NHPA), as amended, 16 U.S.C. 470, expands protection of historic and archaeological properties to include those of national, State, and local significance and directs Federal agencies to consider the effects of proposed actions on properties eligible for or included in the National Register of Historic Places.

The Middle Oregon Treaty signed June 25, 1855, ratified march 8, 1859 (12 STAT 963), reserved rights for the Warm Springs to continue off-reservation subsistence activities on public lands, involving fishing, hunting, gathering, and grazing.

12. The American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996, establishes a national policy to protect and preserve the right of American Indians to exercise traditional Indian religious beliefs or practices.

13. Federally Recognized Tribes and Tribal Reserved Rights - Federally recognized tribes are sovereign nations that maintain a unique government to government and trust relationship with the United States (American Indian Resources Institute 1988:26). The trust relationship is essentially one in which Indian tribes trust the federal government to honor the reserved rights made in treaties or other agreements in exchange for Indian lands (Pevar 1992:26).

    In the past, this relationship has been acknowledged in one of three ways; by treaty ratification, Congressional Act, or executive order (Zucker et. al. 1983:131). The various treaties, congressional acts, and Executive Orders that have been crafted during the past 150 years have established a unique legal relationship with the three federally recognized tribes and the United States government. Part of that legal relationship may be found in the Tribes' reserved rights and privileges to harvest and utilize traditional resources, to visit and maintain sacred sites and participate in ceremonies that preserve the essential elements of their culture. Those resources and sacred sites, located on ancestral lands and ceded to the federal government, now constitute a large part of the public domain.

    Three federally recognized Indian tribes reside in central Oregon; the Confederated Tribes of the Warm Springs Reservation of Oregon, the Klamath Tribes, and the Burns Paiute Tribe.

14. The Recreation and Public Purposes Act of 1926, as amended, 43 U.S.C. 869 et seq., authorizes the Secretary of the Interior to lease or convey BLM lands for recreational and public purposes under specified conditions.

15. The Mineral Leasing Act of 1920, as amended, 30 U.S.C. 181 et seq., authorizes the development and conservation of oil and gas resources.

16. The Onshore Oil and Gas Leasing Reform Act of 1987, 30 U.S.C. 181 et seq., provides:
    a. Potential oil and gas resources be adequately addressed in planning documents;
    b. The social, economic, and environmental consequences of exploration and development of oil and gas resources be determined; and
    c. Any stipulations to be applied to oil and gas leases be clearly identified.

17. The General Mining Law of 1872, as amended, 30 U.S.C. 21 et seq., allows the location, use, and patenting of mining claims on sites on public domain lands of the United States.

18. The Mining and Mineral Policy Act of 1970, 30 U.S.C. 21a, establishes a policy of fostering development of economically stable mining and minerals industries, their orderly and economic development, and studying methods for disposal of waste and reclamation.

19. The Taylor Grazing Act of 1934, 43 U.S.C. 315, "[T]he Secretary of the Interior is authorized, in his discretion, by order to establish grazing districts or additions thereto... of vacant unappropriated and unreserved lands from any part of the public domain...which in his opinion are chiefly valuable for grazing and raising forage crops[.]..." The Act also provides for the classification of lands for particular uses.

20. The Public Rangelands Improvement Act of 1978, 43 U.S.C. 1901, provides that the public rangelands be managed so that they become as productive as feasible in accordance with management objectives and the land use planning process established pursuant to 43 U.S.C. 1712.

21. Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), 49 Fed. Reg. 7629 (1994), requires that each Federal agency consider the impacts of its programs on minority populations and low income populations.

22. Executive Order 13007 (Indian Sacred Sites), 61 Fed. Reg. 26771 (1996), requires Federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to:
    a. Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; and
    b. Avoid adversely affecting the physical integrity of such sacred sites.

23. Executive Order 13084 (consultation and Coordination with Indian Tribal Governments) provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.

24. Executive Order 13112 (Invasive Species) provides that no Federal agency shall authorize, fund or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.

25. Secretarial Order 3175 (incorporated into the Departmental Manual at 512 DM 2) requires that if Department of the Interior (DOI) agency actions might impact Indian trust resources, the agency explicitly address those potential impacts in planning and decision documents, and the agency consult with the tribal government whose trust resources are potentially affected by the Federal action.

26. Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act) requires DOI agencies to consult with Indian Tribes when agency actions to protect a listed species, as a result of compliance with ESA, affect or may affect of Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.

Land Use Plan Decisions

The Upper Deschutes Resource Management Plan is a revision of the Brothers-LaPine Resource Management Plan. As described in Chapter 1, the process and substance of the land use planning process is prescribed by the Federal Land Policy and Management Act, and the National Environmental Policy Act. The Council for Environmental Quality (CEQ) regulations for implementing the National Environmental Protection Act (NEPA) encourage two levels of decisions to help establish the scope of a proposed action and promote efficient and effective resolution of issues at the appropriate scales. CEQ Regulations include descriptions of typical federal actions that include: “Adoption of formal plans...which guide or prescribe alternative uses of federal resources, upon which future agency actions will be based,” and “Approval of specific projects, such as construction or management activities

located in a defined geographic area..." (40 CFR 1508.18(b)). NEPA also encourages tiering to "higher level" EISs to avoid duplication of issues.

The BLM Land Use Planning Handbook 1601-1 directs that, "Land use plan decisions establish goals and objectives for resource management (i.e. desired future conditions), the measures needed to achieve these goals and objectives, and parameters for using BLM lands." "...Land use plan decisions ordinarily are made on a broad scale and customarily guide subsequent site-specific implementation decisions." The handbook differentiates between "land use plan" and "implementation" decisions. Implementation decisions authorize specific actions, generally under the guidance of land use plan decisions.

Unless otherwise indicated, decisions made in the Upper Deschutes Resource Management Plan will be "land-use plan" decisions rather than "implementation" decisions that authorize a site-specific action or set of actions. The decisions will describe alternative long-term desired conditions and standards and guidelines under which resource use or activities will be conducted or future decisions can be made within the planning area. In general, the Resource Management Plan will not make final decisions concerning the irreversible or irretrievable commitment of resources.

Desired Outcomes, Goals, Objectives and Probable Actions

The Upper Deschutes Resource Management Plan will express desired outcomes or desired future conditions in terms of specific goals, standards, and objectives. These will direct BLM's actions most effectively in meeting legal mandates, such as the Endangered Species Act; numerous regulatory responsibilities; national policy, including BLM Strategic Plan goals; State Director guidance (see 43 CFR 1610.0-4 (b)); and other resource or social needs. The Resource Management Plan will also identify probable actions and priorities for activities that will not be specific decisions, but will provide the basis for analysis and for future budgeting of planned activities.

Goals are generally broad statements of desired conditions (e.g., maintain ecosystem health and productivity, promote community stability, ensure sustainable development). They are often not quantifiable. Standards are descriptions of physical and biological conditions or the degree of function required for healthy lands and sustainable uses. Standards may address both site-specific and landscape or watershed-scale conditions. Objectives identify specific desired conditions for resources. Objectives will establish desired time frames, as appropriate, for achievement and will be developed using quantifiable measures whenever practical.

The Upper Deschutes Resource Management Plan will identify appropriate uses, or allocations, that are allowable on BLM-managed lands. These allocations will identify surface lands and/or subsurface mineral interests where uses are allowed, including any restrictions that may be needed to meet goals, standards, and objectives. The Resource Management Plan will also identify lands where specific uses are excluded to protect resource values. Certain lands may be open or closed to specific uses based on legislative, regulatory, or policy requirements, or criteria to protect sensitive resource values. If land use plans close areas of 100,000 acres or greater in size to a particular use, Congress must be notified of the closure as prescribed in 43 CFR 1610.6.

The Resource Management Plan will identify probable actions that would likely be needed to achieve desired outcomes of the plan. These actions may include proactive measures (e.g., measures that could be taken to enhance watershed function and condition) or reasonable development scenarios for allowable uses such as motorized trails, mineral development, recreation, timber harvest, utility corridors, and livestock grazing. These probable actions, while not decisions of the Resource Management Plan, provide a context for the land use plan's decisions, an analytical base for the NEPA analysis, and a basis for future budgeting and resource requests. The Upper Deschutes Resource Management Plan will also establish

criteria in the land use plan to guide future decision-making processes concerning many of the resource uses.

The Resource Management Plan will establish administrative designations or recommendations for Areas of Critical Environmental Concern (ACECs), Research Natural Areas (RNA), and National Natural Landmarks (NNL); and, where appropriate, recommend or make findings of suitability for congressional designations such as Wilderness Study areas or eligibility for Wild and Scenic River status.

Planning Guidance and Decision Framework

The BLM Land Use Planning Handbook (Handbook 1601-1), (available at the Prineville District Office, and the BLM web site - www.blm.gov/nhp/index.htm) provides more specific direction concerning land use plan decisions that are relevant to the Preliminary Issues and Alternatives described in Chapter 5. The following section describes the relevant planning guidance from that handbook, followed by a more specific description of the decisions that the Upper Deschutes Resource Management Plan will make.

Land Use Handbook Planning Guidance

Land Use Plans

The Federal Land Policy and Management Act (FLPMA) of 1976, requires that in developing land use plans, the BLM:

1. Use and observe the principles of multiple use and sustained yield;
2. Use a systematic, interdisciplinary approach to integrate physical, biological, economic and other sciences;
3. Give priority to designating and protecting areas of critical environmental concern (ACECs);
4. Rely, to the extent available, on an inventory of public lands, their resources, and other values;
5. Consider present and potential uses of public lands;
6. Consider the relative scarcity of the values involved and the availability of alternative means and sites for realizing those values;
7. Weigh long-term benefits to the public against short-term benefits;
8. Provide for compliance with applicable tribal, Federal and State pollution controls laws, standards, and implementation plans; and
9. To the extent consistent with the laws governing the administration of public lands, coordinate the land use inventory, planning, and management of activities on public lands with land use planning and management programs of other Federal departments/ agencies and State/local governments as well as the policies of approved tribal and State land resource management programs. To the extent practical, BLM must assure that consideration is given to those tribal, State, and local plans that are germane in the development of land use plans for public lands. Land use plans must be consistent with State and local plans to the maximum extent responsibilities detailed under Section 202 (c)(9).

Disposal and Acquisition of Lands

FLPMA also provides specific guidance concerning land ownership or tenure decisions. There are two distinct sets of criteria in FLPMA for evaluating whether disposal of public lands will serve the national interest. One set is for disposal by sale and the other is for disposal by exchange.

Land disposal by public sale is addressed in Section 203 (a) of FLPMA. This section contains three criteria to apply in identifying public lands suitable for disposal by public sale. The criteria, as paraphrased, are that: (a) the tract of public land is difficult and uneconomical to manage as part of the public lands and is not suitable for management by another Federal department or agency; (b) the land is no longer required for a specific purpose; or (c) disposal will serve important public objectives.

Generally, exchanges are the preferred method disposal but sales will be utilized when: (a) it is required to achieve disposal objectives on a timely basis, and where disposal through exchange would cause unacceptable delays; (b) the level of interest in a specific tract indicates that competitive bidding is desirable for reasons of fairness; or (c) disposal through exchange is not feasible. The preferred method of selling public land will be by competitive bidding at public auction to qualifying purchasers. However, modified competitive bidding procedures may be used when there is not legal public access to a tract, when necessary to avoid jeopardizing an existing use on adjacent land, or to avoid dislocation of existing public lands users. Public land may be sold by direct sale at fair market value when: (a) such land is needed by state or local governments; (2) direct sale is needed to protect equities arising from authorized use; (c) direct sale is needed to protect equities resulting from inadvertent, unauthorized use that was caused by surveying errors or title defects; or (d) there is only one adjacent landowner and no legal public access.

The criteria for determining which public lands or land interests are available for disposal by exchange are covered in Section 206 (a) of FLPMA, which requires: (a) A determination that the public interest will be well served by making an exchange: (b) Lands to be exchanged are lactated in the same state; (c) Exchanges must be for equal value but differences can be equalized by payment of money by either party. These criteria require the BLM to consider the public interest by giving full consideration to better Federal land management and the needs of State and local people, including needs for lands for the economy, community expansion, recreation areas, food, fiber, minerals, and fish and wildlife. The criteria also require that the public objectives that Federal lands or interests to be conveyed may serve, if retained in Federal ownership, must not be more than the values of the non-Federal lands or interests and the public objectives they could serve, if acquired. Exchanges will be made only when they will enhance public resource values or improve land patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land uses.

In addition to identifying land suitable for disposal through sale or exchange, the land use plan may identify lands as possibly suitable for disposal under other authorities, including State indemnity selections, agricultural entries, and conveyance under the Recreation and Public Purposes Act.

BLM may identify disposable lands by parcel or by specific areas based on the application of the specific criteria (FLPMA, Section 203 or 206) and other evaluation factors (e.g., resource values and concerns, accessibility, public investment, encumbrances, community needs) identified in the land use plan. It must be clear to the public that <u>all</u> lands within areas covered by any disposal criteria may be transferred out of Federal ownership based on the application of such criteria. To accomplish this, the land use plan must be explicit as to: (1) the location of the lands involved, illustrate on a map of sufficient detail and scale to be clearly understood by the public, or by legal description; (2) the disposal authorities under which the lands may be conveyed (the land use plan may identify lands for disposal under several authorities, pending the application of disposal criteria during plan implementation); (3) the criteria that must be met in order to allow conveyance; and (4) the management objectives to be served by the disposal action.

Section 205 (b) of FLPMA (43 U.S.C. 1715), as paraphrased, requires that acquisitions of land, or interests in land, be consistent with the BLM mission and applicable agency land use plans. Land use plans generally identify acquisition needs by establishing criteria to use in evaluating land acquisition opportunities. The criteria should encompass opportunities that may arise from future exchange, purchase, and donation proposals. Plans may also establish criteria for support needs associated with opportunities for the acquisition of interests in land, such as acquiring access easements and water rights needed for implementing the plan's objectives and decisions.

It is foreseeable that the BLM will acquire management responsibility for certain parcels of land in the future through purchase, exchange, withdrawal revocation, administrative transfers, or some other means. BLM can establish management direction for these lands, contingent on their acquisition, in conjunction with planning efforts on adjacent or similar BLM-administered lands. If acquired lands are surrounded by or adjacent to BLM lands, BLM can extend applicable land use plan decisions, through plan maintenance (see 43 CFR 1610.5-4), to these land after they are acquired without completing a plan amendment as long as there are no unresolved management issues associated with the newly acquired lands. BLM's H-1601-1 Land Use Planning Handbook, section II-6-C elaborates: "If acquired lands are surrounded by or adjacent to BLM lands, BLM can extend applicable land use plan decisions, through plan maintenance, to these land [sic] after they are acquired without completing a plan amendment as long as there are no unresolved management issues associated with the newly acquired lands".

Off Highway Vehicles (OHVs)

All public lands are required to have OHV designations (see 43 CFR 8342.1). All OHV designations, including road and trail designations or redesignations (see 43 CFR 8340.0-8 and 8342.2), must be made through the land use planning process described in 43 CFR 1600. OHV designations should be reviewed periodically to ensure that resource objectives are being met (see 43 CFR 8342.3) "Open" designations are used primarily for sites selected for intensive OHV recreation, where there are no compelling resource protection needs, user conflicts, or public safety issues that warrant limiting cross-country use. Except for interim designations described below, on lands that are designated as "limited," include a map showing the transportation network of roads and trails available for use under the terms and conditions set forth in the land use plan. Interim designations must, at a minimum, establish designations that are sufficient to initiate vehicle management in areas where limited-use restrictions (such as limited to existing or designated roads and/or trails) are warranted and/or identify areas that should be immediately designated as closed to all types of vehicle use. Where interim designations are implemented and vehicle use is limited to existing or designated roads and/or trails, as opposed to seasonal or other types of administrative limitations, a plan amendment to designate the specific roads and trails on which vehicle use is allowed must be initiated within 5 years of completion of the interim designation.

At a minimum, the OHV designations for Wilderness Study Areas (WSAs) must be "limited" to ways and trails existing at the time of inventory, unless "open" is appropriate for a sand dune or snow area. This applies to both mechanized and motorized transport (see Wilderness Study Area Handbook H-8550-1, I.B.11, and refer to 43 CFR 8364.1 for mechanized transport). In addition, future designations may be made for a WSA if it is released from study. Except as otherwise provided by law (e.g, the Alaska National Interest Lands Conservation Act), congressionally designated wilderness areas are statutorily closed to mechanized and motorized use.

Special Status Species

Given the legal mandate to conserve threatened or endangered species and BLM's policy to conserve all Special Status Species, land use planning strategies and decisions should result in a reasonable conservation strategy for these species. Land use plan decisions should be

clear and sufficiently detailed to enhance habitat or prevent avoidable loss of habitat pending the development and implementation of implementation level plans. This may include identifying stipulations or criteria that would be applied to implementation actions. Land use plan decisions should be consistent with BLM's mandate to recover listed species and should be consistent with objectives and recommended actions in approved recovery plans, conservation agreements and strategies, Memorandums of Understanding (MOUs), and applicable biological opinions for threatened and endangered species.

Plan Decisions

Based on broad direction provided by FLPMA and other legal mandates, regulation, policy or direction, the Upper Deschutes Resource Management Plan will make the following decisions:

Land Ownership (Tenure)

The Resource Management Plan will determine, consistent with the zoning concepts described in Chapter 4, the desired location and arrangement of BLM managed lands across the planning area, Consistent with the goals, standards, and objectives for natural resources, efficiency in land management, consolidation of ownership, and community expansion within the planning area the Resource Management Plan will identify:

a. Lands that are available for disposal under a variety of disposal authorities, provided they meet the criteria provided in FLPMA (Section 203 and 206) or other statutes and regulations (see Handbook Section II.B.2).
b Criteria under which proposed Section 205 acquisitions of land, or interests in land, would occur as described in Handbook Section II.B.2.
c. Proposed withdrawal areas (see 43 CFR 2300).
d. Land Classification is outlined in 43 CFR 2400. Under Section 7 of the Taylor Grazing Act of 1934, as amended (43 U.S.C. 315f) lands may be classified. Actions under the following laws require land classification: Recreation and Public Purposes Act for sales (see 43 CFR 2740) and for leases (see 43 CFR 2912); Desert Land Entries (see 43 CFR 2520) Indian Allotments (see 43 CFR 2530), and Carey Act Grants (see 43 CFR 2610); Airport and Airway Improvement Act (see 43 CFR 2640); and State Grants (see 43 CFR 2620). To the extent that the land use planning procedures pursuant to 43 CFR 1600 (Planning, Programming, and Budgeting) differ from applicable classification procedures under 43 CFR 2400, the latter procedures shall be followed and applied. The analysis that supports classification decisions is normally the same analysis utilized in the land use planning/NEPA process to make decisions concerning the disposal or retention of public lands.

Transportation and Access

The Resource Management Plan will determine the long term desired condition for regional and local transportation infrastructure within BLM managed lands across the planning area. Decisions will include the location and arrangement of existing and potential future important transportation corridors across the planning area. Important transportation corridors include both regional (inter-county or intra- and inter-state transportation), and local (intra-county or primary access points to public lands). These transportation corridors will generally include primary (arterials and collectors) transportation systems at both scales, rather than secondary road systems (local or casual use roads). Criteria for determining appropriate road densities based on uses and values will be established. Where appropriate,

additional guidelines for the granting of legally required rights-of-way to private land inholdings will be established. The plan will identify right-of-way corridors with potential to expand, avoidance areas, and exclusion areas, along with any general terms and conditions that may apply (see 43 CFR Part 2800).

Land Uses

Visual Resources

Land use plan decisions will designate Visual Resource Management (VRM) classes in accordance with manual definitions as follows:

Class I - the objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II - the objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer.

Class III - the objective of this class is to partially retain the existing character of the landscape. The level of change to the character should be moderate.

Class IV - the objective of this class is to provide for management activities which require major modification of the existing character to the landscape.

Areas of Traditional Cultural Significance

The Resource Management Plan will establish long-term desired vegetative conditions for important cultural use areas, and will establish criteria for determining allowable activities and access to those areas.

Mineral Uses

The Resource Management Plan will identify the following, consistent with the goals, standards, and objectives for natural resources within the planning area:

a. Areas open or closed to the operation of the mining laws, mineral material disposal, and nonenergy leasing; and

b. In open areas, identify any area-wide terms, conditions, or other special considerations needed to protect resource values.

Commercial Forest Uses

The Resource Management Plan will identify characteristics (indicators) to describe healthy forest conditions (i.e., desired future conditions) for forest/woodland types found within the planning area, and identify the suite of management actions (including appropriate harvest, reforestation, and forest development methods) and associated best management practices, that can be applied to meet desired future conditions and underlying land use allocations. The plan will also identify areas that are available and have the capacity for planned, sustained-yield timber harvest or special forest product harvest. A probable sale quantity (PSQ) determination will not be made for this planning cycle. Due to the beetle epidemic of the 1980s which decimated a majority of the mature timber in the La Pine area, the Brothers/ La Pine Resource Management Plan directed a focus on salvage of dead timer and reduction of fire hazard. Once this is accomplished, no commercial timber harvest, except for periodic salvage, will be expected to occur in the La Pine portion for 30- 40 years.

Livestock Use

The Resource Management Plan will develop criteria to use in identifying lands available or not available for livestock grazing. (see 43 CFR 4130.2 (a)), considering the following factors:

a. Other uses for the land that are not compatible with livestock grazing such as areas of concentrated recreational use or Recreation and Public Purposes Act leases
b. The potential for livestock grazing to introduce or spread noxious weeds.
c. The presence of other resources that may require special management or protection, such as special status species, or ACECs.
d. Threats to public health, safety, or property from livestock straying onto busy roads or private property.
e. Voluntary relinquishment of the grazing preference and permit for an allotment.

We will apply these criteria during the planning process, where information is available, to determine areas where livestock grazing (or other uses) will or will not be allowed, or where seasonal restrictions may need to be applied, in order to maintain a thriving natural ecological balance and multiple-use relationships. The RMP will display both existing permitted use and future anticipated use with full implementation of the land use plan. Where information is not available, the plan will guide subsequent plan amendment decisions regarding levels of permitted grazing use, and provide guidelines for allotment-specific implementation decisions regarding season of use, range developments, and other livestock grazing management practices.

Long Term Leases and Temporary Land Use Permits

The Resource Management Plan will determine the long term desired condition and set criteria when appropriate for where and under what circumstances land use authorizations such as leases and land use permits may be granted (see 43 CFR 2920).

Ecosystem Health and Diversity

Air Quality

The Resource Management Plan will identify desired future conditions and area wide criteria or restrictions, in cooperation with the appropriate air quality regulatory agency, that apply to direct or authorized emission-generating activities, including the requirements in the Clean Air Act for compliance with:

- Applicable National Ambient Air Quality Standards (Section 109)
- State Implementation Plans (Section 110)
- Control of Pollution from Federal Facilities (Section 118)
- Prevention of Significant Deterioration, including visibility impacts to mandatory Federal Class I Areas (Section 160 *et. seq.*)
- Conformity Analyses and Determinations (Section 176(c))

Water Quality and Quantity

The Resource Management Plan will identify, to the extent possible given existing information and available resources, desired future conditions for water quality and quantity within the planning area. The plan will incorporate standards or goals under the Clean Water Act and as a result of the Water Quality Restoration and Water Quality Management Plan process that will be running concurrently with this planning process. The Resource Management Plan will identify criteria or thresholds for determining watersheds that may need special emphasis because of human health concerns, aquatic or upland ecosystem health, or public uses. It will also identify area-wide use restrictions or other protective measures to meet tribal, State, and local water quality requirements, and measures.

Vegetation

The Resource Management Plan will, where not otherwise addressed by the Brothers-LaPine RMP, identify desired future conditions for vegetative resources, including the desired mix of vegetative types, structural stages, landscape and riparian functions, and provide for native plant, fish, and wildlife habitats. Designate priority plant species and habitats, including Special Status Species and populations of plant species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age. Included in the decisions will be the location and arrangement of lands that will provide an emphasis on native wildland habitats and processes; wildlife habitat connectivity between BLM managed and National Forest lands, and uplands and riparian areas. The plan will identify allowable actions needed to achieve desired vegetation conditions.

Fish and Wildlife

The Resource Management plan will, working in close coordination with State wildlife agencies, describe existing and desired population and habitat conditions for major habitat types that support a wide variety of game and nongame species. The Resource Management Plan will designate priority species and habitats, including Special Status Species, and populations of fish or wildlife species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age; and will identify actions that could include seasonal or area-wide use restrictions needed to achieve desired population and habitat conditions while maintaining a thriving natural ecological balance and multiple-use relationships.

Fire Management

Fire is an important ecological component, as well as a primary public safety concern within the urban/wildland interface area. The Resource Management Plan will identify the following to achieve desired outcomes:

a. Areas where wildland fire is not desired at all. In these areas, emphasis should be placed on prevention, detection, rapid response, use of appropriate suppression techniques and tools, and non-fire fuels treatment. Fire suppression may be required to prevent unacceptable resource damage or to prevent loss of life and property.
b. Areas where unplanned fire is likely to cause negative effects, but these effects can be mitigated or avoided through fuels management (e.g., prescribed fire), prevention of human caused fire, or other strategies.
c. Areas where fire is desired to manage ecosystems but where there are constraints because of the existing vegetation condition due to fire exclusion (i.e., more substantial non-fire fuels treatments may be necessary prior to use of prescribed fire).
d. Areas where fire is desired, and where there are no constraints associated with resource conditions or social, economic, or political considerations (i.e., where natural and management-ignited fire may be used to achieve desired objectives, such as to improve vegetation or watershed condition).
e. Broad treatment levels in areas 1.a. through 1.d., above.
f. General restrictions on wildland fire management practices (including both fire suppression and fuels management) if any are needed to protect other resource values. Restrictions may vary by area in 1.a. through 1.d., above, and may be structured to allow the local manager the flexibility to apply restrictions on a seasonal or annual basis, based on resource conditions, weather factors, and operational capability.

Recreation

The Resource Management Plan will determine long term desired recreational settings and identify the allowable kinds and levels of recreation that balance the public's recreation demands with the natural resource capabilities within the planning area. Decisions will

include the location and arrangement of recreation facilities and OHV designations that will provide for mixed or segregated motorized and non-motorized activities with a variety of recreational development levels. The Resource Management Plan will identify the general management strategies, including major actions, limitations, and restrictions required to maintain recreational values.

Motorized Uses

The Resource Management Plan will determine long-term desired conditions for motorized uses, including where those uses are designated as "open," "limited," or "closed" to OHVs (43 CFR 8342.1). The Resource Management Plan will establish criteria by which motorized road and trail densities can be developed for specific areas including but not limited to:

- wildlife habitat, population goals, and objectives
- other land uses
- resource conditions
- recreational goals and objectives

The Resource Management Plan will, where sufficient information is available (e.g.: already approved trail or road systems), make final determinations about site-specific trails available in areas designated as "limited".

Millican OHV Area Litigation

The Central Oregon Forest Committee v. Kenna, Civil No. 98-29-ST (D. Or.), litigation decision, the courts required that "The BLM shall analyze the impacts of its Millican Valley Off-Highway Vehicle Management Plan or the successor to said Plan in an Environmental Impact Statement. This EIS shall consider the cumulative impacts of OHV use consistent with this Courts's opinion, as encompassed by the Findings and Recommendations of November 5, 1909, as undertaken in the EIS which will accompany the Prineville District's land use plan amendment for the "urban interface" area. In the event that BLM determines that completion of the urban interface EIS is unattainable, the BLM shall meet all requirements for analyzing cumulative impacts in another EIS.[1].

The Urban Interface Environmental Impact Statement (EIS) has, as described earlier, been replaced by the Upper Deschutes Resource Management Plan. The Upper Deschutes Resource Management Plan has an expanded scope and different scale than the original Urban Interface EIS. Within the context of this Resource Management Plan the following elements of the litigation will be addressed:

- areas where OHV use is allowed within the planning area, including conditions of use within those areas that, when followed, would have generally predictable effects on resources in accordance with the Resource Management Plan Environmental Impact Statement .
- analyze, in an EIS, the expected cumulative effects of allocating lands for various levels of motorized uses across the planning area, including uses in the Millican Valley area combined with consideration of adjacent National Forest, BLM, and private land uses on mule deer winter range and sage grouse habitat.

Special Management Areas

The Resource Management Plan will identify the long-term desired condition, distribution and location of areas with special management emphasis. Such areas may contain unique or representative vegetation, geologic, wildlife, scenic, recreational, or cultural values. If appropriate, the Resource Management Plan will recommend areas for designation such as

[1]– COFIC v. Kenna, Final Judgement, Page 2.

National Conservation Areas, National Wild and Scenic Rivers, National Historic or Scenic Trails, or National Recreation Areas. Consistent with the goals, standards and objectives for the planning area, the Resource Management Plan will also designate Wilderness Study Areas to be managed under current interim management policy; and review undesignated river segments for eligibility for inclusion in the National Wild and Scenic River System.

For areas which meet the relevance and importance criteria as specified in 43 CFR 1610.7-2(b),the plan will identify goals, standards, and objectives for each area. Constraints and mitigation measures (also see BLM Manual 1613) will be identified that are needed to protect the area and prevent irreparable damage to resources or natural systems, or to protect life and promote safety in areas where natural hazards exist.

Archaeological Resources

The Resource Management Plan will establish long-term desired conditions for archaeological resources. It will identify area-wide criteria or site-specific use restrictions that apply to special archaeological resources, that may affect the location, timing, or method of development or use of other resources in the planning area. It will also identify measures to proactively manage, protect, and preserve cultural and heritage resources as well as areas of traditional cultural significance for their various uses as noted in the BLM 8100 manual.

Public Health and Safety

The Resource Management Plan will determine the long-term desired conditions for target shooting or other firearm activities, and fuel reduction and wildland fire suppression activities (see also Ecosystem Health and Diversity). Decisions will include conditions under which firearm discharge would be allowed and may include decisions where such use would be prohibited. Decisions will also include the public lands that would be categorized for different levels of fuel management or fire suppression intensities and standards and guidelines by which those activities would be conducted will be established. (See also, Ecosystem Health and Diversity, Fire Management). Decisions to resolve issues concerning illegal dumping, and safety conflicts with livestock will be addressed primarily through decisions concerning transportation and access and livestock land use.

In the RMP, we will describe the current conditions that can lead to collisions between vehicles and livestock define the BLM's goal for public safety associated with this risk, determine which BLM actions produce or prevent unacceptable risks; and set up standards for fence location and maintenance, road location and design, speed limit, and allowable uses near roads.

Chapter 3
Area Profile

Introduction

The Area Profile describes the social, economic, physical and biological environment of the planning area. It includes descriptions of the current amount, location, condition and use of each resource, placing emphasis on resources that would be affected by management changes proposed in this document. This section of the AMS will be used as the basis of the affected environment section of the RMP/EIS. The Area Profile addresses all resources and management programs in the resource area.

The planning area occupies two separate portions of central Oregon and contains about a sixth of the geographic area of Crook County, a quarter of Deschutes County, a small portion of southern Jefferson County, and a small portion of Klamath County. This area includes or is adjacent to the most populated area in eastern Oregon, and has experienced one of the highest growth rates in the state. The population of Crook County is 19,182, an increase of 36% from 1990, the majority of which reside in the planning area. About half of the 115,367 residents of Deschutes County live within the planning area. The number of residents in Deschutes County has increased by 54% since 1990. The population of Jefferson County is 19,009, an increase of 39% from 1990. A small area of northern Klamath County is also in the planning area, but it is mostly a sparsely populated forested and agricultural area.

Prineville and Redmond are the only two incorporated cities located within the planning area boundary, although the city of Bend is located immediately adjacent to the planning area. Prineville, the Crook County Seat, is located about 18 miles east of Redmond and 35 miles northeast of Bend. Prineville is in the most populated area of the county. Its population is 7,356 (though the city contends it is 8,205 and is disputing this total with the Census Bureau), up from 5,355 in 1990. Redmond's population is about 13,481, a 53% increase from the 7,163 population in 1990. Redmond is the second largest city in Deschutes County, and is located about 15 miles north of Bend. Bend and Redmond are within the 20 fastest growing cities in Oregon. Redmond also has the regional airport, which has commercial flights to major cities on the west coast.

Bend is the largest city in eastern Oregon, with a population of 52,029, a 39 % increase from the 1990 population of 20,469. The population of Bend (the Deschutes County seat) is projected to double in about 20 years. This influx of population is anticipated to continue for about five years, then slightly diminish over the following 15 years. Also adjacent to the planning area are the towns of Sisters and Madras. Sisters is in Deschutes County, east of Bend about 20 miles. Madras, the Jefferson County Seat, is located about 25 miles north of Redmond. All of these cities are among the 100 fastest growing communities in Oregon.

Within the planning area, Powell Butte, O'Neil, Terrebonne, Tumalo, Wickiup Junction, La Pine, and Alfalfa have been designated Rural Service Centers by the counties. Each has an increasing population. Traditionally, these were small gathering places with a post office, a store, a grange hall, a restaurant, or similar businesses centrally located to serve agricultural communities. La Pine has all the amenities of a small town. During the last election, citizens in the La Pine area rejected a proposal to incorporate their community. The unincorporated community of Crooked River Ranch is located within the planning area, in southern Jefferson County. The population of Crooked River Ranch is approximately 4,500 persons, with approximately 60% of the lots on the ranch developed (phone conversation, Pat Reitz, Crooked River Ranch Rural Fire Protection District, 2001).

In the 2000 census of **Crook County**, approximately 91% of the planning area is white; 0.03% is black; 1% is American Indian, Eskimo, or Aleut; 0.5% is Asian or Pacific Islander; 6% is Hispanic or Latino; and 1% of more than one race. In the 1990 census, approximately 95% were white; 0.08 were black; 1.5% were American Indian, Eskimo, or Aleut; 0.3% is Asian or Pacific Islander; 3% is Hispanic or Latino; and "more than one race" was not a

category in the 1990 census. This indicates that the percentage of whites in the county has decreased by 4% while the percentage of Hispanics or Latinos has increased by 3%, with minor increases in the percentages of other minorities.

In the 2000 census of Deschutes County, approximately 93% of the planning area is white; 0.2% is black; 1% is American Indian, Eskimo, or Aleut; 1% is Asian or Pacific Islander; 4% is Hispanic or Latino; and 2% of more than one race. In the 1990 census, approximately 96% were white; 0.1% were black; 1% were American Indian, Eskimo, or Aleut; 1% is Asian or Pacific Islander; 2% is Hispanic or Latino; and "more than one race" was not a category in the 1990 census. This indicates that the percentage of whites in the county has decreased by 3% while the percentage of Hispanics or Latinos has increased by 2%, with minor increases in the percentages of other minorities.

The percentages of populations from Jefferson and Klamath counties represented in the planning area are too small to be indicative of the census information for those counties and this planning effort, and, particularly in the case of Jefferson County, are isolated blocks separated from the general population. These areas would more closely parallel the information for Deschutes County.

The national median age is 35.3; the median age in Oregon is 36.3; and the median age for the planning area counties is 38.6 for Crook and 38.3 for Deschutes. The difference of two to three years between the national and state median ages when compared to the median age of the counties is attributed to the perception of central Oregon as a retirement mecca, having communities or population pockets of seniors such as in La Pine (median age 44.7), Sunriver, and Crooked River Ranch.

The cities within or adjacent to the planning areas tend to be below or at the national or state median age: Bend–34.8, Madras–28.7, Prineville–32.9, and Redmond–32.7.

Over the last decade the population median age in Crook and Deschutes counties has increased by about two years, which is consistent with national and state trends.

The median income level for a family of four in the state of Oregon is $46,000, and the per capita income level for the state is $25,912. Crook County's median income level is $34,400,with a per capita income level of $19,905. Crook County qualifies as a economically distressed community because of its low income level and high unemployment, currently about 11%. Deschutes County has higher median and per capita income levels: $41,600, and $24,784, respectively.

Physical Setting

Climate

The climate within the planning area is controlled primarily by air masses that move eastward across western Oregon, and into central Oregon. What happens to these air masses in central Oregon is largely the function of two geographical variables. The first is elevation. As elevation decreases from the southern part of the planning area near La Pine, to the northern part of the area near Madras, average temperature increases while precipitation decreases. The second is the rain shadow effect of the Cascade Range, which diminishes precipitation rates moving west to east, with the western part of the planning area averaging 15"/yr. while the eastern part of the planning area averages 10"/yr. The La Pine area averages 15-20"/year (Taylor, 1993). Most of the precipitation occurs as snow during winter

months, and thunderstorms during summer months. The summer thunderstorms are often high intensity and relatively short in duration. The amount and duration of snowfall in winter is variable, but the southern part of the area receives the highest amounts for the longest duration (United States Department of Agriculture, Soil Conservation Service, 1998). Average high air temperatures generally range in the low 40s in the winter to mid-80s in the summer, with extremes around 107°F. Average low temperatures range in the low 20s in the winter to high 40s in the summer, with the coldest temperatures plummeting to -34°F. in the winter.

Air Quality

Most of the planning area has relatively high air quality. A steady trend toward improved visibility has been observed in the Bend and Redmond areas in the past 10 years, largely attributed to the phasing-out of older wood stoves and the use of cleaner methods for heating homes.

Some wildernesses have been designated Class I Areas for air quality management. No class I areas lie within the planning area, although the Mt. Jefferson, Mt. Washington, and the Three Sisters Wildernesses all lie 15 to 30 miles to the west, and the Strawberry Mountain Wilderness is 70 miles to the east.

Particulate emissions are regulated for some counties in Oregon. No regulation exists for Deschutes, Jefferson, or Crook Counties. Klamath and Lake Counties are partial non-attainment areas for PM-10, which is airborne particulate material in smoke that is less than 10 microns in diameter. The portions of Klamath and Lake Counties with this designation are the populated areas around Klamath Falls and Lakeview, some 80 miles south of the planning area. While the southern half of the La Pine portion of the planning area is in northern Klamath County, decisions related to the planning area are not expected to impair conformance with the Clean Air Act.

Physiography and Drainage

The approximately 885,883 acres comprising all lands in the planning area includes parts of the two major ecologically based land provinces—the Mazama, and the John Day. The physical characteristics of the different provinces of Oregon are based on geography, geology, and soil (Anderson et al., 1998). The planning area resides in the Deschutes Basin, primarily within the Lower Crooked, Upper Deschutes, and Little Deschutes, Sub-basins (See Map 2- Sub-basins, Watersheds, and Sub-Watersheds; and the Aquatic/Riparian/Water section for more discussion on hydrologic units). The area is dissected by numerous miles of perennial, intermittent, and ephemeral streams.

The Mazama province is represented in the western 3/4 of the planning area. It is covered by a continuous mantle of wind blown deposits of pumice and other volcanic materials spewed over the countryside when Mt. Mazama erupted about 6,500 years ago. Other volcanic activity and eruptions, as well as glacial actions have created areas consisting of basaltic, andesitic, rhyolitic, and tuffaceous deposits and cinders and glacial till. Elevations range from 2,700 feet at the northwest boundary to 8,300 feet on Gearhart Mountain. Most of the province lies between 4,000 and 5,000 feet elevation.

The John Day province is represented in the northeastern 1/4 of the planning area. It is characterized by long generally north-to-south mountain ranges and valleys with ancient lake terraces and fans. Elevations range from about 1,000 feet in the northwest corner to 7,300 feet at Fields Peak in the Ochoco Mountains.

The geology of the planning area is characterized by relatively young extrusive volcanic materials and volcanic derived sedimentary materials. For the most part the rocks are flat lying, being interrupted by a few rounded piles of volcanic material, small displacement faulting and an occasional topographic extreme, including Smith Rocks and the canyon of the Crooked River. Relief is moderate throughout the planning area. The topography of the Deschutes and Crooked Rivers is the product of numerous volcanic eruptions within and around the basin. These have contributed to a diverse section of lava flows, pumice air-fall deposits, ignimbrites, and diatomite. Erosion of these volcanic materials have supplied large volumes of fragmental material to form the volcaniclastic sediments found in the basin. Interesting geologic features found in the area include cinder cones, lava flows, pressure ridges and lava tubes (caves).

Most of the planning area is drained by the Deschutes River and its tributaries, which include the Little Deschutes River, Tumalo Creek, Dry River, Squaw Creek, Metolius River, Crooked River, and Willow Creek. Water is a limited resource in the agricultural areas of the survey area because of the limited precipitation, high infiltration rate, and moderate or rapid permeability of the soils.

The La Pine sub-basin in the southwest portion of the planning area lies between the High Cascade Mountains and Newberry Volcano, and has served as a catchment for the materials eroded off the sides of the volcanic piles. The basin has filled with stream and lake deposits composed of volcanic derived silts, sands, gravels with minor amounts of diatomite.

Water

Groundwater flow that originates in the Cascade Range is the major source of streamflow for the Lower Deschutes and Lower Crooked Rivers, and Lower Squaw Creek. (Gannett, et al., 2001). Substantial ground-water discharge occurs along the lower 2 miles of Squaw Creek, the Deschutes River between Lower Bridge and Pelton Dam, the lower Crooked River, and in Lake Billy Chinook. The discharge of groundwater is controlled by geology, where the low permeability of the John Day Formation forces groundwater from the overlying Deschutes Formation to be discharged into the rivers. Discharge of groundwater is demonstrated by the numerous springs that emanate from the canyon walls of the lower Crooked River and lower Deschutes River gorges. The flows for Upper Squaw Creek, Little Deschutes River, Tumalo Creek and Crescent Creek originate as spring flows in the Cascades. Snowmelt from the Ochoco and Maury Mountains, as well as springs from the South Fork Crooked River, provide flow to the Upper and Middle Crooked River.

Natural flows to the Deschutes and Crooked River are modified by the operation of five major reservoir systems: Crane Prairie (55,300 af) and Wickiup (200,000 af), both located in the Upper Deschutes River sub-basin; Crescent Lake (91,700 af) in the Little Deschutes sub-basin; and Prineville Reservoir (153,000 af) and Ochoco Reservoir (46,500 af) modify flows in the Lower Crooked River sub-basin. The magnitude and frequency of flood events on the Crooked River below Bowman dam has been reduced since the closure (meaning completion) of the dam in 1960. Prior to the closure of Bowman Dam in 1960, average peak discharges typically ranged from 3,000-7,000 cfs. Following closure, peaks never exceed approximately 3,300 cfs, though the spring runnoff in April of 1993 came close with discharge measured at 3,250 cfs (See Figure 1). Peak flows that used to occur on average once every 5 years (i.e., 5,000cfs), have not occurred at all since dam closure, which has likely had a significant effect on flood plain and landscape level features. In addition, capture and

storage of peak streamflows have effectively increased summer low flows from pre-dam conditions, as well as decreased bankfull flows from approximately 2,200 cfs to 1,200 cfs (see Figure 2; and Figure 3). A decrease in bankfull flows have likely caused the Crooked River to decrease its channel capacity through changes in channel dimension and pattern. Bankfull discharge is considered to be the channel-forming or effective discharge (Leopold,

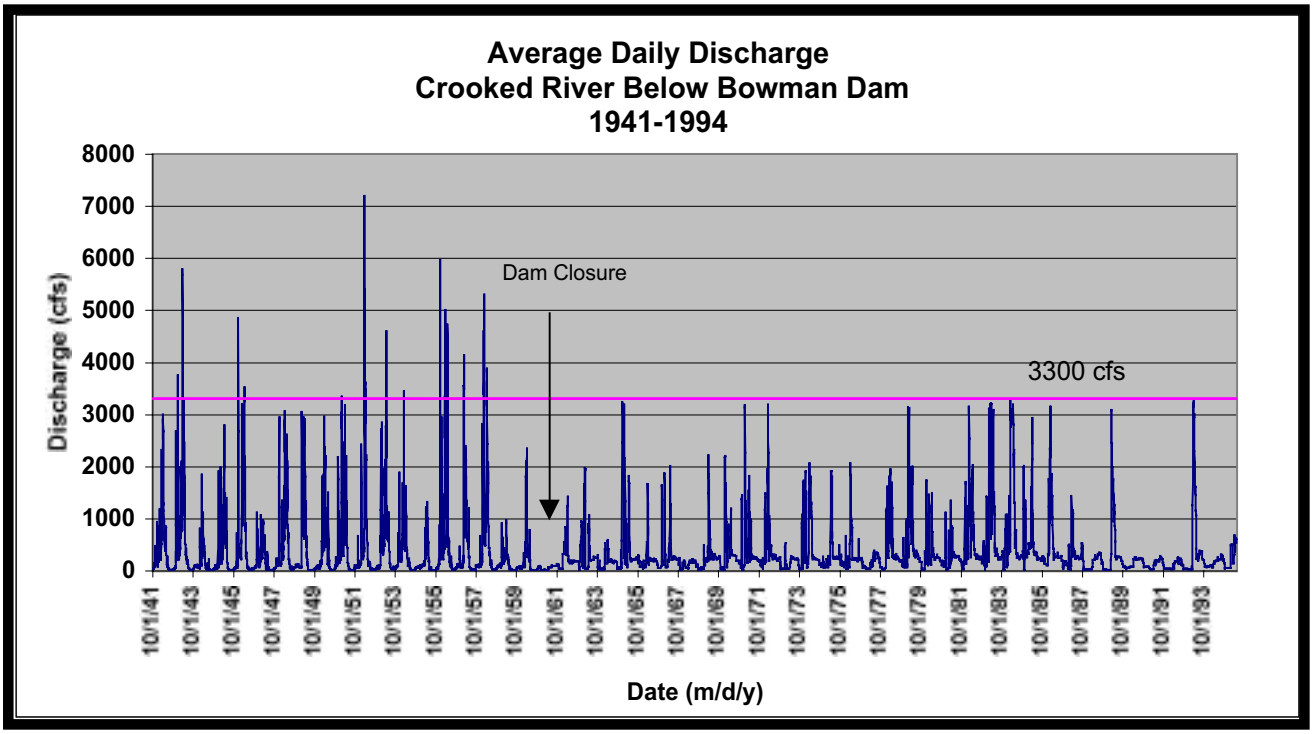

Figure 1. Average Daily Discharge, Crooked River below Bowman Dam.

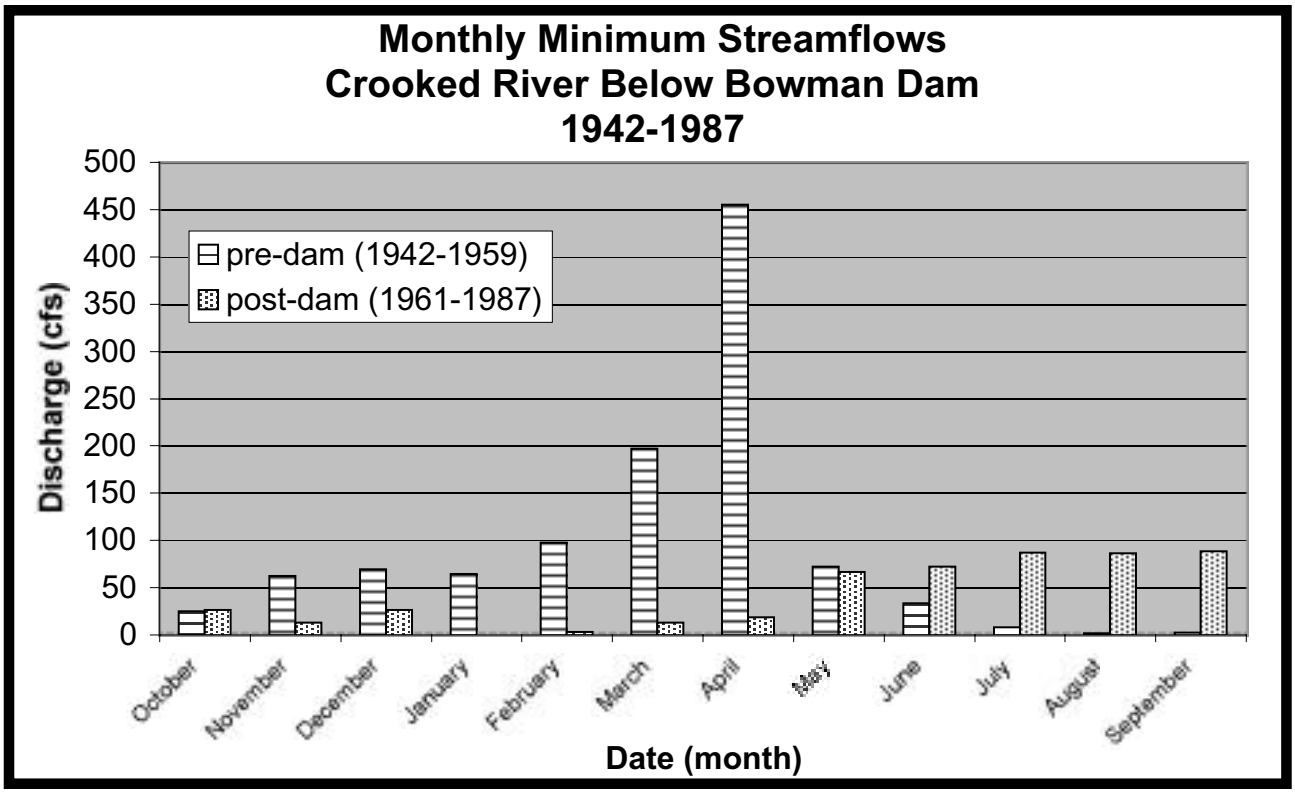

Figure 2. Monthly Minimum Stream Flows, Crooked River below Bowman Dam.

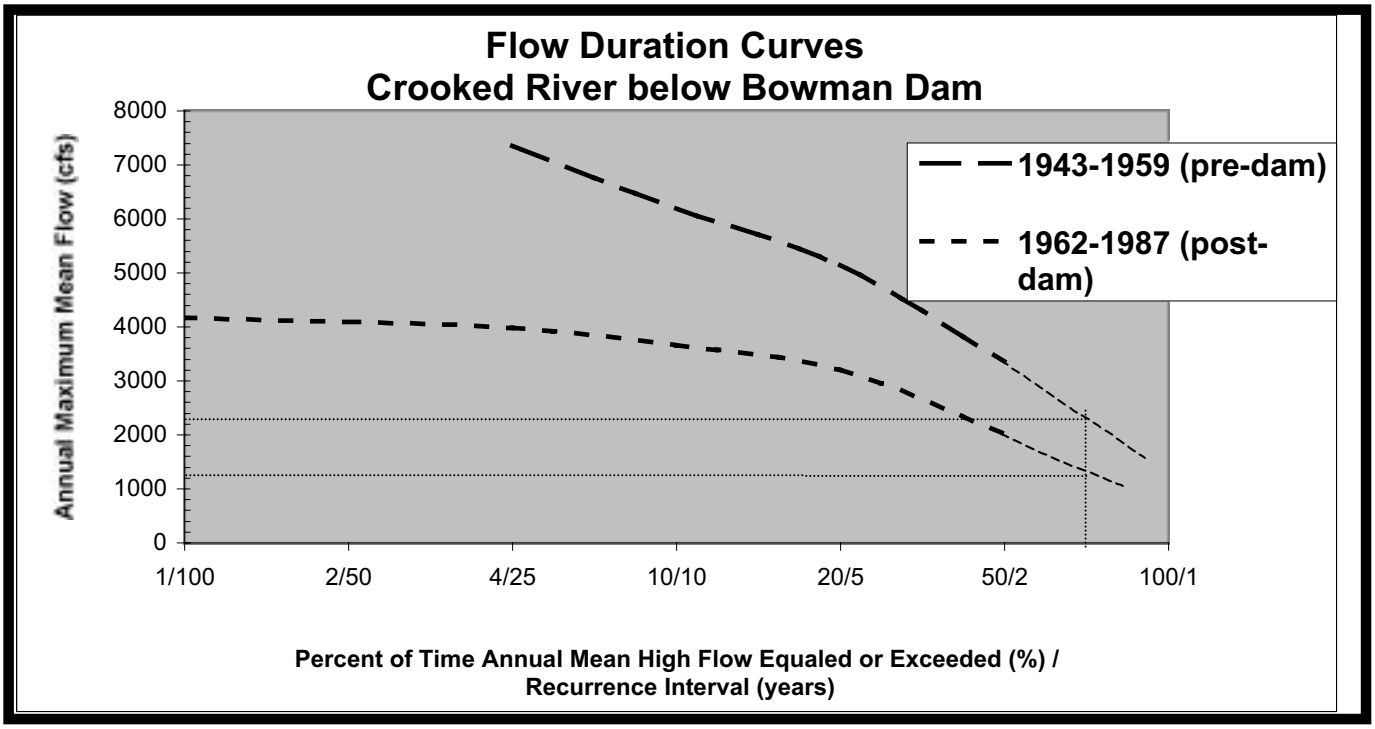

Figure 3. Flow Duration Curves, Crooked River below Bowman Dam.

1994). This discharge is sufficiently frequent and sufficiently effective to be most important in forming and maintaining the channel through the erosion and deposition process. Because the Upper Deschutes River is largely spring fed, it historically has a stable hydrologic regime in which fluctuations in water flows are minimal compared to rivers dominated by surface runoff (USDA Forest Service, 1996). However, streamflows on the Deschutes River have been altered since 1922 by Crane Prairie Reservoir and since 1942 by Wickiup Reservoir. In addition, six irrigation districts divert water near Bend to irrigate 115,000 acres in Jefferson, Crook, and Deschutes counties. Approximately 60% of the annual flow measured in the Deschutes River at Benham Falls is diverted for irrigation (Main, 2000). As a result of water storage and diversions for irrigation, the natural, stable flows of the Upper Deschutes River have been replaced by lower flows during winter storage months and higher flows during the summer irrigation season (USDA, Forest Service, 1996). Just outside and to the north of the planning area, the Pelton-Round Butte Hydroelectric Project operates a series of three dams as "modified run of the river". Thus, average daily inflow from the Middle Deschutes, Lower Crooked, and Metolius Rivers to the Pelton-Round Butte Project is approximately equal to the average daily discharge to the Lower Deschutes River.

The planning area includes several naturally occurring ponds and numerous constructed ponds. Most of the naturally occurring ponds are seasonally flooded dry lakebeds which are located primarily in the Northern Area. Other perennial ponds are fed by irrigation canal water or are excavated material sites that have intercepted the groundwater table. Stock water ponds that are constructed in intermittent stream channels or within dry lakebeds acquire water during spring runoff of snowmelt and are generally seasonal, drying as summer progresses. Stock ponds created in meadows are fed by groundwater and may be seasonal or perennial depending on the location. Many ponds constructed for stockwater receive water from irrigation canals.

Numerous wetland types occur within the planning area but are currently unmapped or classified electronically for most of the planning area. The US Fish and Wildlife Service has digitized various wetland types based on their national wetlands inventory (US Fish and

Wildlife Service, 2001). The digital data is available for approximately the western half (47%) of the northern planning area. Within the area for which there is data, there are 1,011 acres of wet meadows, no acres of forested wetland, and 500 acres of shrub wetland. Wetlands are often found along streams, old stream channels, and low lying areas. Narrow strips of wetlands exist along both sides of the Deschutes River, Crooked River, Squaw Creek, McKenzie Canyon Creek, Little Deschutes River, and Crescent Creek. Wetlands created by irrigation water, such as Mayfield and Reynolds Ponds, are human-caused and are not considered federally designated wetlands. These ponds, however, still retain riparian values. Several acres of wetlands occur adjacent to some irrigation canals due to leakage. In the La Pine area, wetlands occur in several areas. Due to the shallow water table they are more common within the La Pine area than in the remaining planning area.

Aquatic/Riparian/Water

Hydrologic units can be identified according to a system developed by the USGS. This system delineates a hierarchy of geographic regions and their subparts, such as region, subregion, basin, subbasin, watershed, and subwatershed. Each hydrologic division within the hierarchy is called a "field" (see Map 2- Sub-basins, Watersheds, and Sub-Watersheds). Surface water within the planning area flows within the Middle Columbia subregion of the Pacific Northwest region. The entire planning area is situated within the Deschutes basin. The Northern Area is located primarily within the Lower Crooked and Upper Deschutes sub-basins, while the La Pine area is located mainly within the Little Deschutes sub-basin. The Interior Columbia Basin Ecosystem Management Project (ICBEMP)(USDA and USDI, 2000) has identified 6 subwatersheds within the planning area as Aquatic A2 subwatersheds (see Map 2- Sub-basins, Watersheds, and Sub-Watersheds). Four are within the Upper Deschutes sub-basin, and two within the Lower Crooked sub-basin. The A2 subwatersheds are intended to provide a system of core subwatersheds that are the anchor for recovery and viability of widely distributed native fishes. These subwatersheds, located on the lower Crooked River, lower Deschutes River, and the Deschutes River immediately downstream of the confluence of Crescent Creek and the Little Deschutes River, were selected due to their strong populations of native redband trout.

The preferred alternative of the Interior Columbia Basin Ecosystem Management Project (Final EIS, 2000), identifies the Upper Crooked Sub-basin as a high restoration priority sub-basin. In addition, the Beaver/South Fork Crooked sub-basin, which lies outside of the planning area, was also identified as a high restoration priority sub-basin. These sub-basins were chosen as high priority for restoration because they have high risk to aquatic and terrestrial species and habitats from natural disturbance, have good opportunity to reduce those risks through restoration activities, and provide employment and economic opportunities in tribal communities.

In 1991, in response to growing concern over the integrity of ecological processes in many riparian and wetland areas, the BLM established national goals and objectives for managing riparian/wetland resources (Riparian-Wetland Initiative for the 1990s). The initiative's goals are to restore and maintain existing riparian/wetland areas so that 75 percent or more are in Proper Functioning Condition (PFC) by 1997, and to provide the widest variety of habitat diversity for wildlife, fish, and watershed protection. Subsequently, the BLM established a definition of PFC and a methodology for its assessment. The BLM has adopted PFC assessment as a standard for evaluating riparian areas and uses this to supplement existing stream channel and riparian evaluations and assessments. Perennial streams and wetlands located on BLM managed land have been assessed for condition using the PFC methodology. The PFC assessment employs a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and processes (Prichard, *et al*., 1998). The assessment of the on-the-ground condition refers to how well the physical processes are functioning.

PFC is defined separately for lotic and lentic waters, as follows.

Lotic waters: (running water habitat, such as rivers, streams, and springs; see BLM Technical Reference 1737-9 and -15):

> Riparian/wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:
>
> - dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality;
> - filter sediment, capture bedload, and aid flood plain development;
> - improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action;
> - develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, waterfowl breeding, and other uses; and
> - support greater biodiversity.

Lentic waters: (standing water habitat, such as lakes, ponds, seeps, bogs, and meadows; see BLM Technical Reference 1737-11 and -16):

> Lentic riparian/wetland areas are functioning properly when adequate vegetation, landform, or debris is present to:
>
> - dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality;
> - filter sediment and aid flood plain development;
> - improve flood water retention and groundwater recharge;
> - develop root masses that stabilize islands and shoreline features against cutting action;
> - restrict water percolation;
> - develop diverse ponding characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, water bird breeding, and other uses; and,
> - support greater biodiversity.

Riparian/wetland areas are classified as functional at-risk when they are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation. These areas are further distinguished based on whether or not they demonstrate an upward, static, or downward trend.

Riparian/wetland areas are classified as nonfunctional when they clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of a particular physical attribute, such as a flood plain, is an indicator of nonfunctioning condition. Riparian/wetland areas are classified as being in unknown condition when the BLM lacks sufficient information to make a determination.

Because the functioning condition of riparian/wetland areas is a result of the interaction between geology, soil, water, and vegetation, the process of assessing whether or not a riparian/wetland area is functioning properly requires an interdisciplinary team, including specialists in vegetation, soils, and hydrology. The team also requires a biologist because of the fish and wildlife values associated with riparian/wetland areas. Because of unique attributes of individual riparian areas, site-specific and on-site assessments are necessary.

Riparian/wetland areas will function properly long before they achieve an advanced ecological status. The range between PFC and an area's biological potential then becomes the

Table 3A Proper Functioning Condition Assessment Ratings in Planning Area

Stream/Pond/Wetland Name	Functional Rating
Stream Name	
Deschutes River	Proper Functioning Condition
Little Deschutes	Proper Functioning Condition
McKenzie Canyon	Proper Functioning Condition
Crescent Creek	Proper Functioning Condition
Pond Name	
Mayfield Pond	Proper Functioning Condition
Reynolds Pond	Proper Functioning Condition
Wetland Name	
Linear Wetland	Functional-At-Risk, Trend Not Apparent
Jackpine Loop	Proper Functioning Condition
Hard to Find	Functional-At-Risk, Trend Not Apparent
La Pine High School	Proper Functioning Condition
Patchy	Proper Functioning Condition
La Pine Airport	Proper Functioning Condition
Round Meadow	Proper Functioning Condition
Carex Wetland	Proper Functioning Condition
Poole Allotment	Proper Functioning Condition
Pipeline Meadow-East	Functional-At-Risk, Downward Trend
Howard Lane	Proper Functioning Condition
Morgart Allotment	Functional-At-Risk, Downward Trend
Boot Creek Headwaters Spring	Functional-At-Risk, Downward Trend

"decision space" for social, economic, and other resource considerations. Until PFC is attained, management priorities and options focus on reaching this threshold. Areas that meet PFC will be managed to assure a continuation of this condition, and that progress is being made toward achieving the desired condition. Table 3-A lists the functional rating for assessed streams, ponds, and wetlands in the planning area.

Dominant Hydrologic Processes and Water Quality

Many streams within the planning area are designated as water quality limited according to the Oregon Department of Environmental Quality. Section 303(d) of the Clean Water Act requires that each state develop a list of waterbodies that do not meet water quality standards (see Map 3-303(d) Listed Streams and Appendix A-303(d) Listed Streams by Sub-basin) and delineate the stream segments and listed criteria for all streams within the vicinity of the planning area.

Within the planning area, most of the Deschutes River, Squaw Creek and the majority of the Crooked River are listed for flow alteration due to irrigation withdrawals or regulation from dams. Within the Upper Deschutes/Lower Crooked area, there are approximately 720 miles of canals and laterals that divert water from the Deschutes and Crooked Rivers to more than 160,000 acres of irrigated lands in the basin (Gannett, et al., 2001). Water quality data collected by the DEQ on the Deschutes River at Lower Bridge has documented relatively warm stream temperatures and high levels of biochemical oxygen demand and total phosphates (Cude, 1999 Annual Report). As a result, eutrophication is active from April until October, as evidenced by high pH and dissolved oxygen values. Eutrophication is the process of enrichment of water with nutrients, mainly nitrogen and phosphorous compounds, which results in excessive growth of algae and nuisance aquatic plants. It increases the amount of organic matter in the water and also increases pollution as this matter grows and then decays. However, over the ten year period from 1990-1999, the Lower Bridge site showed a significant improvement in water quality. On the average, the DEQ considers water quality at the Lower Bridge site to be fair in the summer and good in the fall, winter, and spring (Cude, 1999 Annual Report).

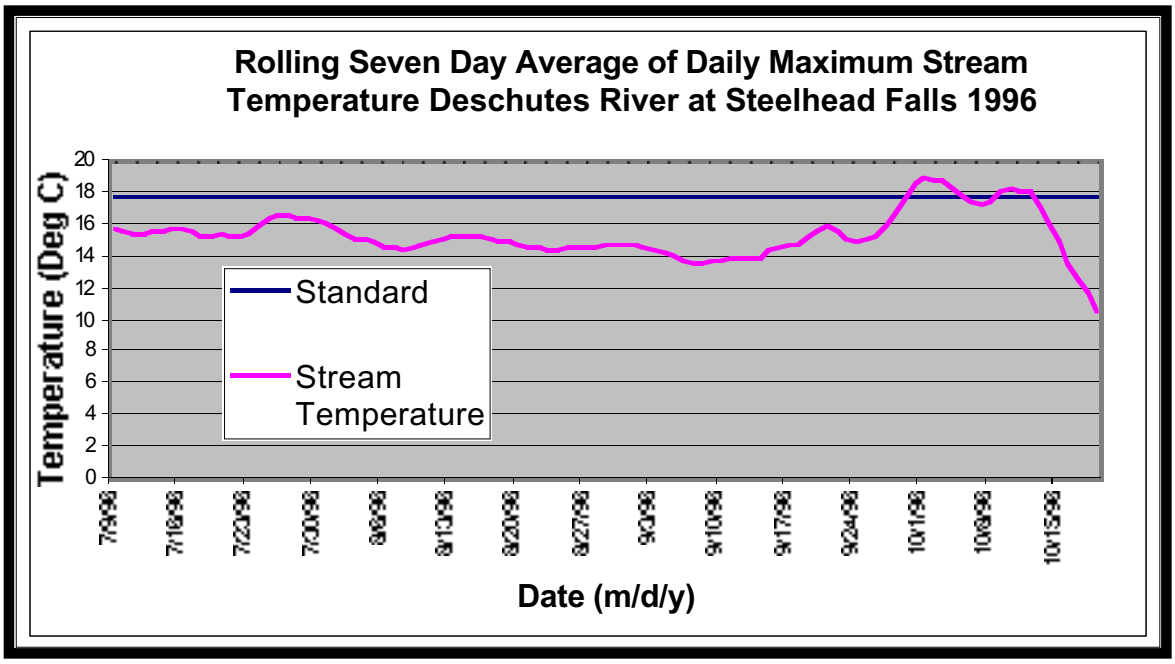

Figure 4. Rolling Seven Day Average of Daily Maximum Stream Temperatures, Deschutes River at Steelhead Falls.

Figure 4 shows stream temperature data collected by the BLM at Steelhead Falls, located approximately 6 miles downstream from the Lower Bridge site. Data was collected in 1996 and shows the seven-day moving average of the daily maximum in relation to the state standard, which is 17.8°C (64°F). It appears that stream temperatures exceed the state standard late in the season, when streamflows are at their lowest and supplemental flows from reservoir releases for irrigation purposes are reduced.

One DEQ monitoring station on the Crooked River at Lone Pine indicates eutrophication is occurring in the river as evidenced by high pH and dissolved oxygen supersaturation. At this site, high water temperatures were detected during the summer months, and high concentrations of biochemical oxygen demand, total phosphates, and total solids were detected throughout the year. Spikes in total phosphate levels, related to heavy precipitation, were also seen at this site. Results of monitoring of the Crooked River at Lone Pine Road indicate elevated levels of fecal coliforms and nitrate and ammonia nitrogen at various times throughout the year. The reduction in water quality at this site is due to land usage including irrigated agriculture that supports confined animal feeding operations (CAFOs) and grazing. These additional impacts lead to a general depression in water quality relative to upstream conditions. However, over the ten year period from 1990-1999, the Lone Pine site showed a significant improvement in water quality. On the average, the DEQ considers water quality of the Crooked River at the Lone Pine site to be poor.

Figure 5 depicts stream temperature of the Crooked River approximately four miles below Bowman Dam for the period 1997-1999. Due to the release of cool water from the bottom of Prineville Reservoir, stream temperatures for the three years depicted generally meet the state standard of 17.8°C (64°F). The exception is about a 1-3 day window in 1998 where the standard was exceeded. Downstream from the temperature station, stream temperatures quickly increase due to normal stream heating processes and altered stream channel and riparian vegetation conditions.

Within the Little Deschutes sub-basin, stream temperature is the only listed parameter for the Little Deschutes River, Crescent Creek, and Paulina Creek. However, listings in 2002 will likely include dissolved oxygen as a limiting criteria for the Little Deschutes River (B.

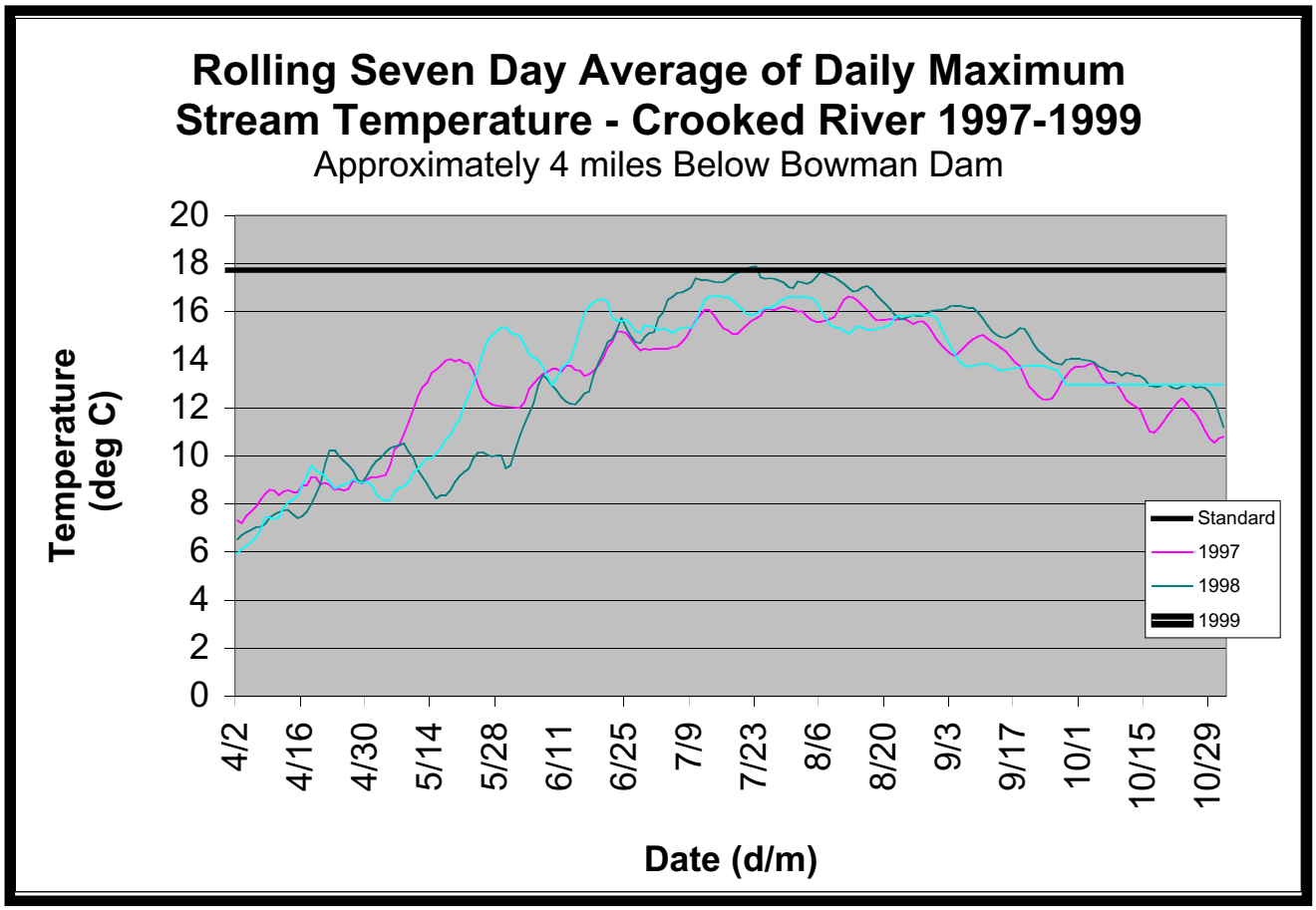

Figure 5. Rolling Seven Day Average of Daily Maximum Stream Temperatures, Crooked River.

Lamb, pers. comm.) Stream temperature is also a listed criteria for many other streams within the area.

Residents of central Oregon depend on a large supply of groundwater and surface water for human consumption, fish and wildlife habitat, agriculture, industry, and commercial uses. Demands on water resources have increased in Oregon over the past few decades. Although most early water rights were established for irrigation and mining, today's demand includes municipal water supplies, commercial and industrial supplies, and maintenance of adequate streamflows for fish, recreation, and water quality. Groundwater plays a key role in providing an adequate domestic water supply for the planning area. Virtually all drinking water within the planning area is dependent on groundwater. Public supply pumpage is concentrated primarily in urban and major resort areas, with scattered, smaller systems in rural areas. In addition, many residents are not connected to public water supplies and rely on private domestic wells (Gannett, *et al*., 2001). The only watersheds to provide surface water for drinking purposes are Bridge Creek within the Tumalo watershed, which provides drinking water to the city of Bend, and Pole and Upper Squaw Creeks in the Whychus watershed, which provides drinking water to Sisters. There are also thousands of groundwater protection zones currently being delineated for drinking water by the Oregon Health Department. One potable water well located on public land is at Chimney Rock campground. This wells is monitored to ensure the State of Oregon's requirements for public water systems are met (OAR 333).

Although there are several developed springs and small reservoirs on BLM managed lands, currently, there are only two reservoirs with appropriate water rights. All of these water sources were developed primarily for the purpose of domestic livestock watering, with wildlife considered as a secondary benefit.

The principal source of recharge to the groundwater aquifer is precipitation that occurs in the Cascade Range. Approximately 40% to 70% of the precipitation in the Cascades infiltrates to the groundwater system and moves toward discharge areas near the confluence of the Deschutes, Crooked, and Metolius Rivers near Lake Billy Chinook (Gannett, et al., 2001).

Virtually all of the regional groundwater in the Upper Deschutes discharges to the surface in these streams in the vicinity of Lake Billy Chinook. East of the Cascade Range, within the planning area, there is little or no ground-water recharge from precipitation. However, the groundwater is artificially recharged by leaking irrigation canals. In 1994, approximately 490 ft^3/s, or 46% of the total amount of water diverted for irrigation (1,060 ft^3/s), leaked through the canal bottoms to become ground water (Gannett, et al., 2001).

Since surface water resources are fully appropriated within the Upper Deschutes region, groundwater must supply the water needs for all new development in the planning area (USGS, 1999). Because the ground-water system and streams are hydraulically connected, use of ground-water can reduce streamflow.

The La Pine area is characterized by shallow ground-water and rapidly draining soils. Thousands of lots one-half to one acre in size have on-site septic systems and domestic wells. Between 1982 and 1995, the DEQ has detected nitrate levels as high as 41 mg/l. The US Environmental Protection Agency (EPA) maximum contaminant level for nitrate in public water supplies is 10 mg/l. As a result, the Deschutes County Environmental Health Division, the DEQ, and the USGS, working in cooperation, are addressing the issue of ground-water contamination from on-site systems in the La Pine region.

Soils

In general, there are five geographic areas within the planning area. The soils in these areas are described below and include 21 general mapping units documented in *Upper Deschutes Soil Survey* (NRCS, 1992), Crook County Soil Survey, Prineville Soil Survey, and the Brothers Soil Survey (BLM,).

The La Pine area has cold (cryic soils) very deep (> 60 inches) somewhat excessively drained, loamy coarse sands to a gravelly (pumice) loamy coarse sand formed in ash and pumice over buried alluvial gravelly sandy loam and loam soils.

The Millican area has cool (frigid soils) very deep and deep (> 40 inches) to moderately deep (20 - 40 inches) excessively well to well drained loamy coarse sands, sandy loams formed in ash and pumice over buried alluvial and lacustrine gravelly sandy loam and loam soils, or basalt bedrock in basins and lava plains. In the uplands a moderately deep and shallow (10 - 20 inches) stony sandy loam and loam over varied (skeletal) subsoils, but mainly sandy loams to clay loams over rhyolite and basalt bedrock occurs on the steeper hills, buttes, and mountains.

The Bend, Redmond, Sisters and Culver area has warmer (mesic soils) moderately deep to shallow, well drained loamy coarse sands (southern portion) and sandy loams (northern portion) soils formed in ash and pumice over recent lava (blisters) flows and gravelly loams to sandy loam (Sisters area) soils formed in ash and pumice over alluvial glacial outwash. The very steep canyons of the lower Deschutes and lower Crooked River are exposed rock outcrops with mostly shallow skeletal loams and sandy loams. There are a few isolated upland buttes that have similar soils as those described in the uplands in the Millican area (Cline Buttes, Smith Rock area).

The Powell Buttes area has cool (uplands and north slopes) and warmer (alluvial terraces, fans, lava plains and southern slopes) moderately deep to shallow, non-skeletal and stony or

skeletal, well drained sandy loams and gravelly loams over basalt and rhyolite bedrock or duripans (hardpans). The uplands are similar to those described above.

The Prineville area has a mix of low alluvial terraces and floodplains and the uplands to the north, east and south. The low terraces and floodplains are mainly deep to moderately deep well drained, alluvial stratified (gravels) of sandy loams, loams, silty loams and clay loams that are mostly irrigated farmlands. The uplands to the north are the shallow to moderately deep and deep loam well drained and clay loam soils of the rolling foothills to Ochoco National Forest and Grizzly Mountain. The uplands to the south are a mix of deep to shallow well drained gravelly, sandy loams, loams and clay loam soils over clay and skeletal clay loam and loam subsoils. These soils formed in colluvium and residuum from basalt, igneous and sedimentary bedrock with less ash deposition.

Continued development within the planning area may lead to activities that disturb soil surfaces by direct displacement, compaction, removal of protective vegetation and soil biological crusts resulting in increased susceptibility to wind and water erosion. Indiscriminate vehicle use off existing roads is the primary activity of concern.

Prime Farm Land

There are 33 detailed soil mapping units identified as Prime Farm Land in the Upper Deschutes Soil Survey and 27 (draft) detailed soil mapping units are identified as Prime Farm Land in the Crook County Soil Survey (draft) area. These units are usually identified with deeper alluvial soils of stream terraces, flood plains (if drained or protected from flooding) and/or irrigated lands with few restrictions to tillage practices and less than 8 % slopes. In the urban interface areas almost all of this type of acreage are irrigated lands. In the Upper Deschutes Soil Survey about 10 % or 168,000 acres of the lands would meet the definition of prime farmland if an adequate and dependable supply of irrigation water were available.

Biological Soil Crusts

Biological soil crusts consist of bacteria, microfungi, cynobacteria (blue-green algae), green algae, bryophytes (short and tall mosses and liverworts) and lichens. The lichens have a symbiotic interrelationship between fungus and algae or cyanobacterium. The main components of these biological crusts are photosynthetic and most are capable of drying out and suspending respiration without negative consequences. They are also capable of almost immediately starting up again upon receiving moisture. They play important roles in soil ecosystem processes (Eldridge and Rosentreter, 1998) including soil stability and soil moisture (Belnap et al., 2001). When mosses and lichens get buried they die (Belnap et al., 2001). When biological soil crusts are disturbed, nutrient cycling especially nitrogen, can result in reductions in soil nitrogen or fixation in the range of 75 to 95 % on sandy soils. This is a result in changes to species composition, burial, and reduced input and elevated losses (Belnap et al., 2001). They also have direct multi-interactions with vascular plants in cool deserts (frost-heaving) like those in the planning area by "increased perennial vascular seed entrapment, germination, establishment, survival, biomass, and nutritional status" (Belnap and Harper, 1995).

Fire in pre-historical times was the largest agent of change in the sagebrush-steppe and juniper ecosystems outside of extended droughts in the Planning Area. Generally, the larger the fire area (less mosaic) the longer it took to re-colonize the area from the adjacent mosaic of non-burn areas acting as propagules/seed/spore reservoirs. Large fires today (natural or prescribed), especially if in the presence of non native exotics such as cheatgrass *Bromus tectorum*, can lead to the dominance of this non-native species. This can lead to increased wildland fire frequency which results in a corresponding decrease in species diversity of the soil organic crusts down to just a few species of mosses and cyanobacteria (Kaltenecker 1997 and Belnap et al. 2001).

In most of the western portion of the planning area the soils are sandy loams or loamy coarse sands, with both stony and non-stony surfaces. Some of the best and most complex biological crusts occur on the stony sandy loams and stony loam surface soils on the northern slopes (frost heaving) or in nearly all cases on the northern aspects of juniper, mountain big sagebrush and bunch grasses and amongst the blister rock outcrops. Usually the least utilized sites for biological crusts development are those deeper loamy sand or sandy loam areas in the lower depressional areas away from the stony or rocky blister areas. These are the mesic (warmer), deeper loamy coarse sands of the Gosney-Deskamp-Rock Outcrop or the Deschutes -Stukel Rock Outcrop mapping unit that are more susceptible to wind erosion. In the Millican area the soil unit most susceptible to wind erosion is the Stookmoor-Gardone-Borobey mapping unit and to a lesser degree Dester-Beden-Stookmoor mapping units. These are the frigid (cool) sandy loam soils at 4,000 feet or higher elevations with usually mountain big or low sagebrush / Idaho Fescue dominated rangeland communities. The stony clay and clay loam soils, which are more common in the uplands on the east side of the planning area, or the areas north and southeast of Prineville Reservoir and north of Prineville itself, also tend to have increased biological soil curst diversity. This diversity is the result of both increased levels of precipitation at higher (4,000 to 6,000 feet) elevations and frigid (cooler) soil temperatures and where both mountain big sagebrush bunch grass and low sagebrush / Idaho fescue plant communities are dominant.

Vegetation

Introduction

This section describes the broad vegetative types within the planning area, including important features and trends of each. The discussion will start with an explanation of broad context and important concepts from the ICBEMP (1997). The ecological role of disturbances, both natural and human caused, will be discussed. Special status plants and noxious weeds, although occurring in all the vegetative community types, will be described under separate subsections.

The Upper Deschutes planning area lies on the eastern shoulders of the Cascade Range in a broad vegetative transition zone, along a precipitation gradient between forested ecosystems on the west and the high**,** dry shrub-steppe environment common to the Great Basin. The planning area may be characterized by several major distinct vegetative community types (See Map 4-General Vegetation Classes and Table 3B Vegetative Types in the Planning Area). The northern area is primarily a mosaic of juniper woodland and sagebrush/grassland, while the La Pine area is dominated by lodgepole pine forest with bitterbrush in the understory. Ponderosa pine dominates the overstory in small areas in both the La Pine and northern portion of the planning area where the vegetation transitions between mixed conifer and juniper woodland. Riparian plant communities lining the rivers, creeks, and irrigation canals are relatively minor in terms of total acres in the planning area, but extremely important as wildlife habitat and are popular areas for recreational use.

Ecosystem Context

An ecosystem is a complete interacting community of living organisms and the abiotic components that make up their environment. An ecosystem can be something as small and discrete as a pond or a single log, or it can be the entire earth's biosphere. The purpose of ecosystem management is to maintain the integrity of ecosystems over time and space. Ecosystems are dynamic, and are constantly changing with or without human influence. Ecosystems have biophysical limits, which are sometimes at odds with social expectations, and there are limits to our ability to accurately predict how things may change (Haynes et al., 1996)**.**

Table 3B. Vegetative Types in the Upper Deschutes Planning Area

Vegetative Group	BLM Acres	Total Acres in Planning Area	BLM Acres (%)	Total Acres, All Ownerships (%)
Shrub	213,654	362,362	52.3	41.0
Juniper	132,969	278,647	32.5	31.5
Pine	26,787	76,571	6.6	8.7
Grass	19,565	62,547	4.8	7.1
Ag/Riparian/Meadow	12,008	87,494	2.9	9.9
Non Vegetated	3,399	11,959	.8	1.4
Mixed Conifer	513	4,147	.1	.5
TOTALS	408,895	883,727	100	100

The Interior Columbia Basin Integrated Scientific Assessment studied historical and current ecological conditions at a broad scale. At the subbasin scale, the Upper Deschutes planning area, along with much of the rest of the Interior Columbia Basin, was shown to have "low composite ecological integrity" based on disturbance to expected vegetative patterns and composition, altered hydrologic function, presence of exotic species, and changes to historic disturbance relationships in the forestlands, rangelands, hydrologic systems, aquatic character, and terrestrial species habitat (USDA FS, 1996). This composite rating emphasizes ecological process and function, rating human altered systems lower, although they may or may not be productive and meeting social expectations.

Disturbance Relationships

Disturbance relationships are important because ecosystem properties are often regulated by the type, severity, size, and frequency of the disturbances which visit those ecosystems. Individual plant communities align themselves according to soil properties and available precipitation in a moisture limited environment, but the composition and arrangement of the individual plant communities are also influenced by the presence or absence of natural and human caused disturbance influences.

Important natural disturbances include wildland fire, drought, and wind. Insects and pathogens are also common disturbance vectors. Their presence is a factor in, or a symptom of, many of the forest health issues currently being experienced in the west. The La Pine area, in particular, has had severe alterations to its ecosystem from a variety of disturbance factors including insects and disease, wind, drought, fire (including fire exclusion), and human activities. The interaction of fire exclusion, insects and disease, logging, and a proliferation of lodgepole seedlings, saplings and bitterbrush has created pressing concerns for wildland fire hazard and ecosystem health in the La Pine area.

Human-caused disturbances include management activities and uses such as logging, juniper thinning, prescribed burning, firewood cutting, livestock grazing, seeding, and ROW and road construction. Off-road travel is also a major disturbance factor in plant communities in the planning area. Human-caused fire directly affects vegetative succession. Human ignitions have accounted for 81% of the 62 fires within the past 20 years in the La Pine area, and 19% of the 685 ignitions in the northern area. Many disturbances to the customary ecological processes are caused by inhibiting natural disturbances. Suppression of wildland fire results in increased fuel loading, shifts in species composition and abundance, and an overall increase in fire severity. Grazing can reduce the amount of available fuel in which fire can burn, a shift in the inherent disturbance regime. Roads also act as fire breaks, further changing the environment in which fire can burn.

Juniper Woodlands/Shrub-Steppe

The juniper woodlands/shrub-steppe communities are the most prevalent within the northern portion of the planning area (i.e., the planning area excluding the La Pine area), as well as throughout central Oregon. The woodlands/shrub/steppe vegetative type comprises 90% (366,370 acres) of the BLM managed lands in the northern portion of the planning area.. The juniper woodland communities are similar to the shrub/steppe communities, differing primarily only in the presence of the western juniper tree overstory. For the purposes of discussion in this section, the two communities will be described separately. The shrub/steppe discussion will focus on the shrub, grass, and forb components, while the juniper woodland discussion will focus on the tree component. The juniper woodland section will further discuss the dynamics of juniper occupation and describe the stands of old-growth juniper present in the planning area.

Shrub-Steppe

Sagebrush communities dominate nearly every vegetative mosaic within the shrub-steppe vegetative type in the northern area. There are several sagebrush species in the planning area, each of which characterizes particular habitats. The two most important sagebrush communities in the planning area are the big sagebrush and low sagebrush communities.

Big Sagebrush

This plant community includes mountain big sagebrush, Wyoming big sagebrush, and basin big sagebrush as the dominant shrubs, with mountain big sagebrush as the most widespread. Big sagebrush communities dominate the shrub layer on approximately 90% (329,730 acres) of the woodland/shrub-steppe vegetative type in a wide variety of mixed plant association mosaics. Big sagebrush crown cover is generally within the range of 10-30%. Basin big sagebrush grows on sites having moderately deep, well-drained loamy soils such as those occurring on droughty bottomlands and fans. Wyoming big sagebrush is present throughout the uplands of the shrub-steppe vegetative type on slightly more sandy or gravelly soils. Mountain big sagebrush generally occurs on higher elevations than basin big or Wyoming big sagebrush, dominating on sites above 4,200 feet in gravelly or stony soils. Mountain big sagebrush often mixes with Wyoming big sagebrush, particularly in the pumice zone on the western portion of the northern area. Mountain big sagebrush occasionally includes low sagebrush on some of the stony flat “scabs.”

Few trees occur on mountain big sagebrush sites while juniper and ponderosa pine can be common associates on the more mesic and lower elevation basin and Wyoming big sagebrush sites. Juniper overstories can attain up to 40% crown cover over big sagebrush communities. Pine occurs in isolated groups and at the northwest edge of the northern area.

Antelope bitterbrush is also often a component on the more mesic sites, particularly on the west edge of the northern area, the skeleton area, and south Millican area. In these areas,

bitterbrush can be dominant or co-dominant with big sagebrush. Green and gray rabbitbrush also often occur in association with big sagebrush. Rabbitbrush is an early seral species, with the greatest occurrence on disturbed sites.

Grass and forb associations with big sagebrush vary widely, depending on the specific site. The presence of native grasses can range from a mere presence to an abundance of grass depending on soil/water relations and historical disturbances on the site. The grass component is generally dominated by either bluebunch wheatgrass, Idaho fescue, or western needlegrass. Idaho fescue increases as one moves north and west in the planning area toward a lower elevation and greater soil moisture gradient. Idaho fescue also favors north slopes and, on deeper soils, the shade of tree canopies. Western needlegrass is dominant at the higher elevations and where soils are more sandy. Other grasses occurring in association with big sagebrush communities include needle and thread grass, Thurber's needlegrass, Sandberg's bluegrass, bottlebrush squirreltail, junegrass, and Great Basin wildrye.

Introduced grasses are primarily cheatgrass and crested wheatgrass. Approximately 6,400 acres of BLM managed land within the planning area were seeded to crested wheatgrass in the 1950s-70s primarily to increase livestock forage production. Introduced from Eurasia, crested wheatgrass has adapted well to the local climate and soils and many seeded areas still support varying densities of this species. After about 10 years, big sagebrush and rabbitbrush begin to re-establish within crested wheatgrass seedings.

Forbs are a minor component in big sagebrush communities, usually comprising less than 2% in an area. Near Bend, where the sandy soils are deeper, there is a greater frequency of species such as Douglas' false-yarrow, Oregon sunshine, and lineleaf phacelia. As soils lose depth and become rockier, as is common at the higher elevations and scab flats, various milkvetches, balsamroot, and Columbia puccoon increase in frequency. Various species of buckwheat, lupine, and milkvetches are common throughout the area. Other common forbs include common yarrow, Lewis' flax, Nutall's larkspur, granite gilia, wooly groundsel, rockcress, phlox, aster, and paintbrush. Micro-biotic crusts, though inconspicuous, are important to the ecological integrity of some sites (see Soils section for more discussion of micro-biotic crusts).

Low sagebrush

Low sagebrush communities occur on approximately 8% (29,310 acres) of the woodland/shrub-steppe vegetative type within the planning area. This community is strongly dominant on upland shallow, stony, basalt-derived soils, but can also grow mixed with other sagebrush species on moderately deep, gravelly mountain soils. Low sagebrush typically has less than 10% crown cover and has a much lower growth form (4-16 inches) than big sagebrush. Low sagebrush is the dominant plant, and often the only shrub found in the community. Few trees are found on low sagebrush sites. Sandberg's bluegrass is often the dominant grass. Other common associate grasses are bluebunch wheatgrass and Idaho fescue. Common forbs include Hood's phlox, prairie lupine, lineleaf fleabane, false agoseris, bighead clover, and various species of biscuitroots and buckwheats. Low sagebrush sites usually do not form extensive landscape-level covers but, rather, are part of the larger big sagebrush mosaics. The sites have extensive areas of exposed rock with a very sparse total vegetative cover.

Most sagebrush communities are adapted to the passage of periodic fire. Fire in the unmanaged sagebrush ecosystem would have burned at intervals between 25 and 100 years, depending upon the availability of fine fuels and grasses to carry fire in this vegetative type (Wright & Bailey, 1982). The amount of grass and other vegetation to help carry fire is directly related to the amount of moisture available, and so the drier sites occupied by drought tolerant Wyoming big sagebrush and low sagebrush tend to have the least frequent fire return interval (100 years or more between fires) due to the lack of fine fuels that could carry fire in low wind situations. The more mesic mountain big sagebrush is more likely to

be growing in the company of continuous grass and forb species that can carry fire. Fire return intervals in those ecosystems would be expected to be closer to 25 to 30 years.

We suspect that fire exclusion has played a role in the arrangement, vigor, and distribution of seral stage classes of these sagebrush communities, resulting in an overall loss of heterogeniety. A homogeneous ecosystem consisting of mature sagebrush across a broad area is more prone to larger fires, and the post burn environment is less apt to provide a mosaic of habitat opportunities for wildlife opportunities.

Two potential scenarios result from interruption of the natural fire cycle. One prevalent trend in the planning area is for sagebrush stands to become dense and unproductive, with few grasses in the understory and a high ratio of dead to live crown in the sagebrush. Often juniper becomes established as the loss of grasses makes fire's passage less likely lacking a strong wind.

Another potential trend, less frequent but existing in the planning area, is for a non-native grass like cheatgrass to become established in the stand. Cheatgrass is extremely flammable, and some stands actually burn with much greater frequency, as often as every year or two. This cheat-fire cycle is difficult to remedy once it has started.

Western Juniper Woodlands

The western juniper woodlands are the driest of all tree-dominated zones in the Pacific Northwest (Franklin and Dyrness, 1973). The range of western juniper extends throughout most of central and eastern Oregon and into other parts of the Great Basin. Juniper woodlands in Central Oregon are within the transition zone between the ponderosa pine forest on the east slope of the Cascades and the high desert shrub-steppe zone to the south and east. Juniper-dominated plant communities cover approximately 33% of the northern part of the planning area, almost always in association with the big sagebrush shrub-steppe vegetative type. In this context, juniper "dominance" refers to areas where juniper density (crown cover) is 10% or greater. Juniper density on these sites generally ranges from 10-40%, depending on site characteristics and past disturbances such as fires, prescribed burning, juniper thinning projects, old homestead clearings, personal-use and commercial firewood sales, and illegal firewood cutting. Plant species which grow between and underneath the juniper are generally the same as those that grow in the shrub-steppe (see description of shrubs, grasses, and forbs in the Shrub-Steppe section).

Western juniper is a highly competitive and invasive species (Rose and Eddleman, 1994). In the absence of fire, juniper has the ability to out-compete other plant species for limited soil moisture and nutrients. This long-lived species can transpire and grow during mild periods in the winter and early spring on unfrozen soils when other vegetation is dormant. Western juniper does not sprout (Burkhardt and Tisdale, 1976). Reestablishment is through seed that is dispersed fairly slowly by water and animals.

Western juniper has been expanding its range into adjacent shrub-steppes, grasslands, and savannas during the past 100 to 150 years (Belsky, 1996), and it has doubled its range in central and eastern Oregon during the past 80 to 100 years. Western juniper expansion has been attributed to livestock grazing, which reduces the fine fuels required for effective fire spread, climatic changes (mild temperatures and above average precipitation in the late 1880s and early 1900s), and reduction in fire frequency due to fire suppression and cessation of Native American burning (Eddleman et al., 1994; Miller and Rose, 1998; Miller et al., 1995).

Where fire returns frequently, juniper is a minor component in the plant community, existing in rocky areas or other places unlikely to burn. However, in the pumice flats of Central Oregon, fire played less of a role, and juniper is much more prevalent. Juniper is poorly

adapted to survive the passage of fire. Young junipers have thin bark and are readily killed by surface fires. In general, the taller the juniper, the greater the severity of the fire required to kill it (Martin, 1978). Fire return intervals in western juniper communities range from 7 to 25 years to more than 100 years. Mean fire interval for western juniper within the Columbia River Basin is estimated at 52 years (Barrett et al., 1997). European settler-induced changes to the ecosystem from fire suppression and grazing has resulted in a longer-term trend of decreasing fine fuels (grasses) and increasing woody fuels (shrubs and trees). This change in vegetative composition and structure has further reduced the natural ability of these sites to carry fire and, therefore, has lengthened fire return intervals.

Post-settlement juniper dominance of some sites can cause alterations to watershed function and ecosystem health. Local research and monitoring has demonstrated some of the implications of juniper dominance for a variety of ecological and physical processes and values. Some of the ecosystem components/processes affected include: vegetation and wildlife species composition and diversity; bio-mass production; invertebrate and micro-biotic changes; water interception, infiltration and runoff; soil temperature; and freeze/thaw processes. Anecdotal information also suggests that juniper site dominance can change groundwater recharge capability; the timing, intensity and duration of stream runoff events; and total watershed water production and storage. Monitoring indicates that these kinds of effects occur in many juniper stands within the planning area. It also has indicated that when post-settlement juniper cover/density is reduced (and appropriate post-treatment practices are applied), soil cover/stability, understory vegetation cover/density, and other desired attributes can increase in quality and quantity. Nevertheless, research throughout the west studying the effects of juniper and pinyon-juniper occupation on ecosystem health and functioning has resulted in differing viewpoints, conclusions, and recommendations.

Old-Growth Juniper

Approximately 50% (66,485 acres) of the juniper woodlands in the planning area are considered to be "old-growth." The literature generally agrees that old-growth juniper is defined as juniper that was present before the migration of white European settlers into the region beginning in the mid- to late-1800s (i.e., trees greater than 130 years of age). This "pre-settlement" or old-growth juniper occurs in large contiguous stands in the Cline Buttes, Alfalfa, Badlands, Horse Ridge, and Millican Road areas. Many of the dominant trees in these stands are much older than 130 years, some approaching 1,000 years of age (Miller et al., 1996). The oldest tree in Oregon, a western juniper tree located within the planning area, was recently documented to be over 1,600 years old. In Oregon, estimates of less than 3 percent of the current 5 million acres of western juniper woodlands are characterized by trees greater than 100 years old (USDI-BLM 1990). Some of the physical characteristics of old juniper trees include: large diameter trunk (often twisted) and lower limbs, rounded or irregular crown, deeply furrowed, reddish bark, broken and dead branches, heart rot, and abundant lichen growth. Old-growth stands are in an uneven-aged structure with younger trees occurring in disturbance areas and in interspace areas between the older trees. Central Oregon old-growth juniper has not been rated according to ecological significance criteria such as those developed for other tree species (i.e., USFS Region 6 Interim Old-Growth Definitions, Bill Hopkins, 1992).

Because many of these trees were already old centuries before European settlement, they are considered to be an integral part of the native Central Oregon landscape; compared to the recently established post-settlement juniper type which is more of a manifestation of recent human and climatic influences. Therefore, old-growth juniper in this EIS will be considered in a different context than the younger juniper that have expanded into and adjacent to the old-growth stands. These old trees provide a variety of non-tangible values such as special wildlife habitat, interpretive/educational opportunities, high scenic values, and preservation of natural gene pools. The central Oregon old-growth stands are unique because they are large and contiguous in area and contain a higher percentage of larger and older trees relative to other juniper woodlands in the Great Basin.

The large size and age of juniper in central Oregon is probably due to several environmental factors. The area has moderately deep pumice soils, more available subsurface soil moisture, and relatively few days during winter when soils are frozen compared to other western juniper sites in the high desert region. These factors allow juniper to out-compete other associated species on these sites. Fire may also play a factor on these sites. Low rainfall results in less fine fuels to carry fire. The flat to gently rolling topography also makes it more difficult for the spread of large, intense wildland fires. Larger trees have a tendency to "fireproof" themselves by creating a zone of sparse vegetation around them through competition and release of growth inhibitors. Older trees with thicker bark are described as "moderately resistant" to fire (Sowder and Mowat, 1965). Control of natural fires and overgrazing with the arrival of white settlers also limited the ecological role of fire in controlling the age and extent of juniper stands in Central Oregon (Burkhardt, 1996).

Increasing urban development and human activities have fragmented old-growth juniper woodlands in Central Oregon. Their removal on private land makes remaining old-growth juniper woodlands on public lands more ecologically significant. Traditional public land uses such as cutting trees for firewood, off-road vehicle recreation, military training exercises, and clearing for ROW construction have also contributed to the direct and indirect effects on these old-growth ecosystems. Hobbyists and furniture makers are increasingly targeting these trees as a raw material source. These and other human activities, both legal and illegal, are compromising the integrity of old-growth woodlands in Central Oregon.

Lodgepole Pine

Lodgepole pine plant communities are the dominant vegetative type in the La Pine Basin, comprising approximately 90% (36,121 acres) of the La Pine portion of the planning area. The most common plant community, by far, is the lodgepole-bitterbrush-Idaho fescue association. On some sites bottlebrush squirreltail and needlegrass are the dominant grasses, in association with lodgepole pine and bitterbrush. Other common understory plant species include wax currant, lupine, buttercup, western yarrow, strawberry, goosefoot violet, balsam groundsel, goldenweed, yellow salsify, silverleaf phacelia, kinnikinnick, and pinedrops.

The ecological status of lodgepole pine is typically that of a pioneer or invader species and is normally seral to other tree species such as ponderosa pine, grand fir, or Engelmann spruce. However, in much of the La Pine area, lodgepole pine is the climax tree species, meaning it persists over a long period of time and is not replaced by any other tree species in this environment. It thrives on disturbance and can establish quickly in an area ravaged by fire, windthrow, insects or disease. This short-lived species is dependent on disturbance for its regeneration, health and vigor. Lodgepole pine is able to become established and grow where other trees cannot compete or survive. This prolific species can germinate and grow in frost pockets, soils with high water tables, and soils with low fertility. One or more of these conditions are common on most sites in the La Pine area. Consequently, lodgepole pine dominates here in pure or nearly pure stands.

Mature lodgepole pine stands comprise 32% (12,843 acres) of the La Pine area. Mature stand structure varies considerably depending on the specific site. These stands are typical of lodgepole pine in its latter stages of successional development. Natural and human activities have substantially altered stand structure and composition. Generally, there is a remnant overstory of scattered larger trees up to 18 inches DBH and pockets of very dense understory reproduction (up to 5,000 trees per acre). Mature stand condition is generally poor, with high density causing low vigor and a high susceptibility to insects, disease, and fire.

During the late 1970s and 1980s a severe mountain pine beetle epidemic occurred over vast acreages of the lodgepole pine forests in central and southern Oregon. The La Pine area is at the northern end of this affected area. Stand structure was drastically altered due to the beetle epidemic. In most of the mature stands, beetle-caused mortality of the overstory (trees 8 inches DBH and larger) ranged from 30-80%. High mortality has thinned the overstory, creating many openings and allowing the development of dense patches of seedlings and saplings. Most of the dead trees have fallen to the forest floor and are in varying stages of decay. A small percentage (5-10%) of the dead trees from the original beetle epidemic are still standing but are expected to all be down within 5-10 years.

Approximately 68% (27,291 acres) of the BLM managed lands in the La Pine area has been harvested in the last 20 years, primarily with seed tree, shelterwood, or commercial thinning methods (see Map5-Vegetation Management Areas). Non-commercial thinning and piling and burning were often associated treatments. Commercial and public firewood harvest has removed most of the dead and down trees within 100 feet of roads. The primary objective for the treatments was to quickly alleviate the extreme fire hazard created with the beetle epidemic. Other objectives were to salvage dead and dying trees and regenerate new stands. These harvested areas are now in varying stages of natural regeneration, ranging from a low density of remnant trees or seedlings to densely reforested with saplings 10-12 feet tall. Prior to the beetle treatments of the last 20 years, earlier harvests occurred over nearly the entire La Pine area from the 1950s to the 1970s. These logging entries were generally low-intensity salvage or single-tree selection harvest of larger diameter ponderosa and lodgepole pine.

Insects and disease continue to impact the mature lodgepole stands. Endemic levels of mountain pine beetle are still present in these stands, killing an occasional tree or small group of trees. Timber harvest and non-commercial thinning treatments have substantially reduced the risk of another major beetle epidemic in the short-term. However, as the remaining smaller trees and new seedlings grow and stand density increases over the next 20 to 50 years, conditions could once again support another major beetle epidemic. Severe infestations of dwarf mistletoe and western gall rust are also common. These diseases generally do not kill trees directly but can have a significant effect on tree vigor and growth. These diseases typically weaken the trees and make them more susceptible to attack by insects or other fungal diseases. Wind and snow breakage of disease-weakened tree boles and branches is prevalent throughout the lodgepole type.

Prior to European settlement, fire occurred in natural lodgepole pine stands every 20 to 100 years. This return interval is atypical of classic lodgepole forests. The La Pine basin tends to experience a longer, drier fire season than high elevation lodgepole, and a shorter fire return interval. These periodic fires varied in intensity, sometimes thinning small trees and undergrowth, sometimes destroying entire stands. Thinning by light ground fires allowed surviving trees to grow larger. More extensive fire mortality allowed for new regeneration of entire stands. Natural fire also maintained a higher percentage of the more fire resistant ponderosa pine on some sites. The effect across the landscape was the development of a variety of vegetative types of different composition, structure, ages, sizes, and shapes. Understory plants were burned off allowing for the rejuvenation of bitterbrush, bunch-grasses, and forbs. Fires would also burn through meadows, killing encroaching tree seedlings and maintaining the extent and integrity of meadow plant communities within the lodgepole pine.

In the last century, public agency fire prevention and suppression policies have not allowed natural fires to run their course. In the absence of periodic fires, lodgepole pine, ponderosa pine, and meadow communities have been altered from that which would have occurred under a natural fire regime. These plant communities have evolved with fire and are dependent on periodic natural fires for maintenance and regeneration. Consequently, lodgepole pine stands have developed into an overmature and overly dense condition. Insects and diseases have increased and tree health and vigor have declined. Stand structure

and species diversity have declined. Herbs and grasses have declined in species composition and density. Bitterbrush density has increased. Bitterbrush has become old and decadent. Meadows have declined in size and plant species composition. This trend in plant community and structural changes is likely to continue in the absence of natural fire.

The combination of high fuel loading from residual dead and down trees and dense "doghair" regeneration still poses an extreme fire hazard in portions of the La Pine area. The situation is exacerbated by the continued rapid growth and development in the La Pine area which has pushed residential areas deeper into forested sites adjacent to and intermixed with BLM managed land.

Treatments within the last five years have focused on creating fire protection zones of up to one-quarter mile adjacent to several residential subdivisions. Although extensive salvage, thinning, and fuels treatments in the last 20 years have reduced fuels in 68% of the La Pine area, there are still several areas of concern near homes and highways. Map 6-Wildfire History and Wildland Urban Interface shows the remaining high risk zones in the La Pine area.

Ponderosa Pine

Ponderosa pine occurs in small stands and as scattered individual trees in both the northern and La Pine portions of the planning area. Since the La Pine and northern planning area sites are so different, the discussion of ponderosa pine for the two areas will be separated accordingly.

Approximately 8% (3,211 acres) of the BLM managed lands in the La Pine portion of the planning is area covered with ponderosa pine or mixed ponderosa/lodgepole stands in which the ponderosa comprises at least 25% of the overstory. Ponderosa pine is particularly evident where there is any hill or slight rise in topography to provide cold air drainage. The Largest stands of ponderosa or ponderosa/lodgepole pine mix occur in the La Pine State Park, adjacent to Paulina Prairie, northeast of Masten Butte, and west of Wagon Trail Ranch Subdivision. Ponderosa pine also occurs as individual trees widely scattered throughout much of the lodgepole pine type. Understory species are similar to those as described in the lodgepole pine subsection.

Ponderosa pine stands in the La Pine area generally have a multi-layered structure with a variety of size and age classes from seedlings to large, mature trees. Dense lodgepole and ponderosa pine reproduction is common in the understory. Historically, there were greater numbers of large diameter ponderosa pine in the La Pine area. Past selective logging, intense stand competition, and mortality by western pine beetle have reduced the numbers of these large trees.

Occurrence of insects and disease is far less common in the ponderosa pine compared to the lodgepole pine in the area. Western pine beetle kills individual large ponderosa, especially those weakened by stressors such as competition, drought, lightening, or disease. Light infections of gall rust and mistletoe occur in the ponderosa pine. A pandora moth outbreak, which occurred in the early to mid 1990s, defoliated and weakened, but did not kill most of the ponderosa pine on the north end of the La Pine area.

Commercial timber operations in the last 20 years have harvested very few ponderosa pine. Salvage and thinning treatments in ponderosa pine stands have focused on removing dead and diseased lodgepole pine and leaving the more healthy ponderosa pine.

If the La Pine portion is excluded, the remainder of the planning area has ponderosa pine on approximately 3% (1,800 acres) of the area, often mixed with juniper. The Tumalo area, Squaw Creek, Fremont Canyon, and the fringe area just east of the Deschutes National Forest contain the largest stands of ponderosa pine. These dry-site pine stands represent the

easternmost extension of the east slope Cascade ponderosa pine forest. Ponderosa pine also occurs as individual trees or in small groups on Powell Buttes, West Butte, Bear Creek Buttes, Crooked River Canyon, and various other north slope and canyon bottom micro-sites where sufficient soil moisture exists. Grizzly mountain also has some Douglas-fir on the north and northeast slopes.

These small ponderosa pine stands typically contain a few scattered large diameter trees (20-30 inches DBH) with a mix of seedlings, saplings, and pole-sized trees in the understory. Small pockets of dense ponderosa pine reproduction occur in the stands on the west side of the planning area. There are endemic levels of insects and root disease causing light mortality in individual trees or small groups.

Understory vegetation is similar to that found in the juniper woodlands just to the east. Antelope bitterbrush dominates the shrub layer and is often co-dominant with big sagebrush or gray rabbitbrush, depending on the site. Squaw or golden currant is often present. Idaho fescue or squirreltail dominate the grass layer. Bluebunch wheatgrass is often present but is not as dominant as in the western juniper. Junegrass can be dominant in some of these pine sites.

Pine stands in the northern area have had very little harvest activity in the last 20 years. Most of these pine sites have been entered at least once within the last 30-50 years, primarily for selective and salvage harvests of larger diameter trees. Selective harvest and stress-induced mortality of mature ponderosa pine has left few areas with late successional or old-growth forest characteristics. These areas serve an important ecological role and provide habitat for a variety of old growth-dependent wildlife species. The distribution, occurrence, and connectivity of this type of forest community is below historic ranges.

Natural fire played a very important role in maintaining the ecological integrity of ponderosa pine stands in the planning area. Fire intervals on these sites were 4-24 years (Agee, 1993). Because fires occurred frequently, they tended to be low-intensity ground fires. These periodic ground fires usually burned in a mosaic pattern and consumed duff, needles, broken branches, shrubs, and small trees. Grasses and forbs were maintained in a denser, more vigorous, more diverse condition. Thin-barked juniper and lodgepole pine were periodically thinned by fire and kept in a subordinate position. The result was a nearly pure ponderosa pine stand with an open, one or two layer canopy, low density, large diameter tree structure.

Fire suppression, beginning in the early 1900s, has substantially altered ponderosa pine stand structure. An absence of fire has allowed seedlings and saplings of ponderosa pine, lodge-pole pine or juniper to became established underneath the larger trees. Current stand structure is now multiple canopy with many more trees per acre at a much smaller average diameter. Lodgepole pine or juniper are gaining dominance. The larger ponderosa pine are showing stress and mortality from understory competition and from drought conditions of recent years. Bitterbrush has also become dense and stagnant with a high proportion of dead to live branches. Grass and forb density and diversity has decreased.

Riparian and Wetland Communities

The “riparian area” is the narrow strip of land that borders a body of water, such as a creek, lake, pond, or irrigation canal. Because of their proximity to water, the plant species present in riparian areas often differ considerably from species found in the adjacent uplands. The riparian areas within the planning area represent only a small percentage of the total planning area, but are important for the overall health of a system. A functioning riparian zone provides fish and wildlife habitat, protects water quality, stabilizes stream banks, aids groundwater recharge, assists in flood control, and provides visual esthetics and recreational opportunities.

Wet meadows are unique riparian habitat. They occur on areas of saturated soils where the water table varies little by season. Usually there are few, if any, areas of free standing open water. The vegetation of wet meadows consists of sedges, grasses, and forbs. Shrubs are limited in wet meadows that are in Proper Functioning Condition (PFC) and generally occur along the margins.

Ponds and stock reservoirs may be perennial or seasonal in nature, such as ponds fed by spring snowmelt (see Water section). Ponds or reservoirs which contain water year round generally support riparian type vegetation such as sedges, rushes, cattails, and occasionally willow. Vegetation surrounding seasonal ponds or reservoirs usually consists of upland type shrubs and/or grasses, or may not be present at all.

Within the Crooked River Canyon located downstream from Bowman Dam (Chimney Rock segment of the Lower Crooked River Wild and Scenic River), the riparian community type is characterized by willow, sedges, rushes, and grasses. Other shrubs, including red-osier dogwood and mock-orange, can also be found (BLM and BOR, 1992). Downstream from the Wild and Scenic River segment, the valley bottom widens and the riparian community type is characterized more by herbaceous vegetation such as grass, sedges and rushes, and less so by shrubs and trees.

Approaching the Lower Crooked River Wild and Scenic River segment near Smith Rocks State Park, the river becomes increasingly confined, generally flowing through a deep, narrow canyon. The same holds true for the Middle Deschutes River downstream from the city of Bend. The riparian zone in both canyons is narrow and dominated by woody species including alder, red-osier dogwood, willow, chokecherry, rose, clematis, sedge, rush, and various grasses. There are very few broad areas containing extensive willow or sedge/rush communities. Increasingly talus and boulders are piled onto the banks and even into the river. Often woody and emergent riparian vegetation grows between boulders. Occasionally the canyon walls recede somewhat and the flood plain widens allowing for a wider riparian zone and adjacent grassy terraces. Within the canyons a number of springs emerge from the canyon walls where there is an increase in riparian vegetation including areas of emergent and sedge/rush communities. These spring associated riparian zones are relatively small in area, usually less than a few acres in size.

The Upper Deschutes River Wild and Scenic River is characterized by stands of lodgepole pine and ponderosa pine as an overstory; a shrub understory of spiraea, snowberry, alder, or willow, and a herbaceous layer of forbs and sedges. There are several large willow/sedge meadows scattered within the reaches (USDA, Forest Service 1996).

The Little Deschutes River contains a complex mosaic of riparian habitats on broad flood plains, including broad meadow and prairie areas composed primarily of sedge, rush, and/or grass communities with scattered willows and other woody riparian species. Most of these meadows are drained and irrigated with water derived from the Little Deschutes River or one of its tributaries. Where these meadows are drained and irrigated, they tend to be dominated more by grass species with sedge/rush communities along the ditches and occasional willow communities. Adjacent to the Little Deschutes River and its oxbows, there are dense willow communities interspersed with wet meadows encompassing a wide variety of emergent and flood tolerant species of vegetation.

Wet meadow, forested wetlands, and shrub wetlands habitat is very limited, much of it is not yet mapped electronically (see Water write-up above). Most of the wetland type vegetation is associated with the high groundwater table in the La Pine area. Sedges, rushes and willows are dominant species within wet meadows adjacent to the Little Deschutes River, and logdepole pine inhabits forested wetlands.

Large floods typically reset riparian vegetation to early seral species, or set back the condition and amount of late seral species. These flood events generally occur during late winter

or early spring. The magnitude and frequency of flood events on the Crooked River below Bowman dam has been reduced since the closure of the dam in 1960. Prior to the closure of Bowman Dam in 1960, average peak discharges typically ranged from 3,000-7,000 cfs. Following closure, peaks never exceed approximately 3,300 cfs. This limits the ability of the stream to rejuvenate during the landform developing process of large floods. Peak flows that used to occur on average once every 1.5 years (i.e., 2,200 cfs, approximately bankful flow) now occur half as often, or about once every 3 years (See Figure 3 - Flow Duration Curves Crooked River Below Bowman Dam). This reduced frequency of what was once bankful flow likely has a significant effect on channel morphology and the resultant riparian vegetation type and composition. Likewise, streamflows on the Deschutes River have been altered since 1922 by Crane Prairie Reservoir and since 1942 by Wickiup Reservoir.

Fire is probably relatively infrequent in the meadow and streamside habitats which are occupied by riparian type species within the planning area. In fact, riparian areas frequently act as fire breaks. The high soil and fuel moisture content characteristic of its streamside habitat reduces the chance of fire ignition and spread. However, under dry conditions, riparian habitats can burn severely (Crane, 1982). Many riparian species are fire tolerant and may even benefit from low to moderate intensity fires. Most willows in all stages of vigor resprout from the root crown or stem base following fire (Haeussler & Coates, 1986; Lotan, et al., 1981; Rowe & Scotter, 1973; Zasada, 1986) and their numerous wind dispersed seeds are important in revegetating areas following fire (Miller & Miller, 1976). Sedges and rushes also can survive fire by sprouting from their extensive rhizomes (Boggs, et al., 1990; Wakimoto & Willard, 1991). Golden and gooseberry currant regeneration is probably favored by low- to moderate-severity fire because germination of soil-stored seed is generally enhanced by scarification in Ribes spp. (Agee & Maruoka, 1994; Bradley, et al., 1991; Moss & Wellner, 1953; Steele & Geier-Hayes, 1993; Steele & Geier-Hayes, 1989). Plants in the rose family, as well as serviceberry, chokecherry, bitter cherry, and red osier dogwood are all moderately fire tolerant and are usually favored by low-severity fire. They can persist after low- to moderate-severity fire because of their ability to sprout from undamaged and/or buried root crowns and rhizomes (Boggs, et al., 1990; Haeussler, et al., 1990). Black cottonwood and white alder are not considered fire tolerant and are highly susceptible to fire damage.

Special Status Plants

The basic policy of BLM is to 1) Conserve listed species and the ecosystems on which they depend, and 2) Ensure that actions authorized or carried out by BLM are consistent with the needs of special status species and do not contribute to the need to list any of these species. BLM's policy is intended to assure the survival of those plants that are rare or uncommon, either because they are restricted to specific, uncommon habitat or because they may be in jeopardy due to human-caused or other actions.

Apart from law or policy, three main reasons stand out for conservation of these species. First, each has a definite, although usually unknown, role in its ecosystem. All parts of the system are important, even if we don't yet understand the connections, for biological diversity and system integrity. Second, plants offer untold potential for human benefit, especially as related to pharmaceuticals as nearly all pharmaceuticals were originally plant based. Loss of a species may mean the loss of a future "wonder drug" or other genetic material valuable to enhance our lives. Finally, these species add esthetic diversity to our world.

For BLM, "Special Status" plants include those species which are proposed for listing, officially listed as threatened or endangered, or are candidates for listing under the provisions of the Endangered Species Act (ESA); those listed by a State in a category such as threatened or endangered, implying potential endangerment or extinction; and those designated by each BLM State Director as sensitive (BLM, 2001).

In Oregon, the BLM designation "sensitive" further includes two sub-categories: "Bureau Sensitive"and "Assessment Species." Bureau Sensitive species include those plant species formerly designated by the U.S. Fish and Wildlife Service (USFWS) as Category 1 and 2 candidates for listing as endangered or threatened under the Endangered Species Act and now termed "Species of Concern." This category also includes species considered by the Oregon Natural Heritage Program (ONHP) to be "endangered or threatened throughout their range."

Assessment species include those species considered by ONHP to be "endangered or threatened in Oregon but more common elsewhere" (List 2).

No species either listed, proposed for listing or candidates for listing under the ESA are known from or suspected on BLM-managed lands in the Planning Area. However, for those State-listed species and sensitive species, existing factors such as declining populations, reduction in habitat, increased disturbances, small and widely dispersed populations and unique habitat requirements contribute to a need for increased management attention to these species to ensure they do not need to be listed under the ESA.

Special status plants receive priority attention for inventory, research, monitoring and management. All proposed ground disturbing activities are subject to botanical inventory prior to implementation and other inventory is accomplished as time and funding allows. All special status plant populations are monitored on a regular schedule with the intervals between visits based on the needs of each. Challenge cost share agreements between the Oregon Department of Agriculture (ODA) and The Nature Conservancy (TNC) have, and continue to provide in-depth monitoring for several species in the District.

All Bureau-authorized actions are reviewed to ensure they do not contribute to the need to list any special status species. This may include modification or abandonment of the proposed action with consideration for protection of the species' habitat as well as the species itself.

Four special status plants are known to occur on BLM-managed lands within the planning area, as shown in Table 3C below:

Peck's milkvetch is predominately found in the area southwest of Cline Buttes, between Tumalo and Plainview. Preferred habitat is open sandy soil dominated by western juniper and sagebrush, usually with a flat aspect. Sandy basins are especially preferred. While the Cline Buttes area is the area with this plant's greatest concentration, several populations have been found on Forest Service and private land south of the planning area in pumice soils dominated by lodgepole pine, with one population located on BLM managed land at the extreme south end of the planning area.

The block of BLM-managed land south of Plainview was designated as Peck's Milkvetch Area of Critical Environmental Concern (ACEC) in 1986. Since 1986, the ACEC has been intensively inventoried for the species and ongoing inventory has extended the plant's known range northeast toward Cline Buttes.

The greatest concern for Peck's milkvetch appears to be loss of habitat as suitable habitat on private land gives way to development. Habitat loss is expected to increase proportionate to the number of people living in and adjacent to the planning area. On BLM-managed land, any activities which cause long-term trampling of the plants and/or soil disturbance are cause for concern as these actions will reduce the plants vigor and ability to reproduce. This includes, but is not limited to, livestock grazing and recreation, but especially unauthorized vehicle use away from established routes and illegal activities such as dumping and firewood theft. Peck's milkvetch has been observed to establish on disturbed sites but only if the disturbance is short-lived and not ongoing. Both recreational impacts and impacts resulting from unauthorized activities are expected to increase along with the human population of

Table 3C. Special Status Plants within the Upper Deschutes Planning Area

Latin Name	Common Name	Status[1]	Ownership
Astragalus peckii	Peck's milkvetch	BS, SOC, T, 1	BLM, USFS, pvt.
Artemisia estesii ssp. *peckii*	Estes' wormwood	BS, SOC, 1	BLM, USFS, pvt.
Botrychium pumicola	pumice grapefern	BS, SOC, T, 1	BLM, USFS, pvt.
Castilleja chlorotica	green-tinged paintbrush	BS, SOC, 1	BLM, USFS, pvt.

[1] BS - Bureau Sensitive
SOC - Species of Concern
T - Listed Threatened by the State of Oregon
1 - OHNP List 1, Endangered or Threatened throughout its range

Deschutes County. Fire, as a natural component of the ecosystem, should not be detrimental to Peck's milkvetch. While some populations wouldn't be susceptible to fire due to a lack of fuel, other vigorous populations have been found in areas which have clearly burned within recent history.

On BLM-managed land within the planning area, Peck's milkvetch appears to be stable. A long-term monitoring study, in cooperation with The Nature Conservancy, was established in 1992, and data collected again in 1993, 1994 and 2000. Based on statistical analysis of the data, it appears Peck's milkvetch increased after 1992 (a dry year) but that some populations may be returning to 1992 levels. Populations grazed prior to 1992 and then mostly ungrazed since appear to be increasing in density. Further monitoring will be necessary to determine the trends of these populations (Rudd, 2001).

Estes' wormwood is a perennial, herbaceous relative of big sagebrush. Its primary known habitat is sandy and gravelly soils along the Deschutes River, from near La Pine in the south to Lake Billy Chinook in the north. Additionally, an old collection of Estes' wormwood has been documented as from "Bear Creek." While this population has not been relocated, recent inventory has found the species in the Prineville Reservoir area and at two locations along the Lower Crooked River, one just below Bowman Dam and from the area just south of Lake Billy Chinook. It is likely other populations occur elsewhere along the Crooked River as well.

Estes' wormwood is affected by livestock and wildlife grazing, streamside recreation, and any activity which could degrade the riparian areas along the Crooked and Deschutes Rivers. Direct impacts on the plants would result in a loss of vigor and reproductive capability, while a change in species composition of the riparian community could result in a drying of the site and a loss of appropriate habitat. Equally important, then, would be upstream pollution or a widely-fluctuating flow regime. As a clonal species, it is likely fire would have no effect. Due to the relative inaccessibility of much of its habitat and the reduced amount of grazing that occurs in the canyons, Estes' wormwood appears to be stable, but there are no quantitative studies to substantiate this.

As the population of Central Oregon increases, it is probable that visitor use in the riparian areas along both the Crooked and Deschutes Rivers will increase as well. This would likely result in continued disturbance and alteration of Estes' wormwood habitat.

Pumice grapefern generally has a distribution from near Crater Lake (National Park Service) to the Deschutes National Forest northeast of La Pine. Originally thought to be found only on high elevation pumice flats, more recent inventory has documented extensive occurrences in the lodgepole pine forest of the La Pine Basin and to the northeast. It grows exclusively on deep pumice soils associated with the Newberry and Mt. Mazama ash deposits and on BLM-managed land, is found mostly south and east of La Pine.

Pumice grapefern in the planning area has been impacted through habitat change. An increased lodgepole pine canopy, as a result of fire suppression, coupled with an abundance of dead and down trees from the recent outbreak of the mountain pine beetle, have resulted in an extremely heavy litter component in much of the La Pine Basin. While the shading resulting from the dense canopy and heavy litter concentration is most likely detrimental to the pumice grapefern, another concern relates to the potential of catastrophic fire as a result of these conditions. The pumice grapefern, no doubt, existed within a natural fire regime in the La Pine Basin, but the existing fuel loading and potentially extreme burning conditions would probably be detrimental should fire occur.

As a relatively fragile species (a fleshy plant growing in easily dislodged soils), pumice grapefern is also easily damaged by logging machinery, off-road vehicle use, and livestock grazing (trampling), although grazing isn't a major factor within its range. Although plants have been found in areas subjected to such activities, it does not appear that this is a preferred habitat, as plant densities appear to be substantially less than in undisturbed areas.

The long-term trend of pumice grapefern is unknown. It is likely that populations have declined due to an increase in the lodgepole pine overstory, but now that many of these areas have been harvested and the woody material removed, these populations could be recovering. Issues related to predation of some populations by animals, inconsistent emergence in the spring and the unknown influence of weather make this a difficult species to monitor with any consistency and, therefore, it is difficult to infer trend. The BLM is a partner in funding a project designed to determine the effects of various types of disturbance on pumice grapefern. Results should be available in 2005.

Green-tinged paintbrush in the Prineville District is at the northeastern edge of its range, and within the planning area, is known from the Horse Ridge, Golden Basin, West Butte and Bear Creek Buttes areas. Requiring a fungal interface with shrubs, it is found most often associated with big sagebrush but also with antelope bitterbrush in ponderosa pine or lodgepole pine communities. Green-tinged paintbrush is more common, although still a Species of Concern, on the Deschutes and Fremont National Forests.

Identified disturbances to green-tinged paintbrush include livestock grazing, off-road vehicle use and fire. Observations indicate that green-tinged paintbrush is preferred by livestock, and in areas where livestock use is heavy during the growing season, heavy utilization on green-tinged paintbrush has been noted. OHV use is a concern since several known populations occur within or adjacent to areas used by OHV enthusiasts.

While fire may enhance most native plant communities, survival of mature big sagebrush and bitterbrush, neither of which are fire resistant, is critical for survival of green-tinged paintbrush. Green-tinged paintbrush has been effectively extirpated from burned areas, although plants survive adjacent to these areas and can likely repopulate in time. No data exists, but it appears that green-tinged paintbrush is stable within the planning area.

Noxious Weeds

There are many exotic (non-native) plant species that occur within the planning area. Most of these aggressive species have been introduced, usually from Europe, Asia, or Russia. These species were imported, either intentionally for their perceived value to humans, or inadvertently as contaminants in feed or other seed or plant products.

The term "weeds" is loosely applied to most of these introduced species. A weed is defined as any plant that interferes with the management objectives for a given area of land at a given point in time (Dewey and Torell 1991). Of the exotic species in the planning area, 12 have been classified by the counties as noxious weeds. "Noxious" is a legal classification rather than an ecological term. Government agencies may designate a species a "noxious weed" if it directly or indirectly imposes economic or ecological effects to agriculture, navigation, fish and wildlife, or public health. Federal, state and county laws and ordinances require that certain actions be taken to manage listed noxious weed species.

Noxious weeds pose a threat to native biological systems and degrade all multiple uses and other values on public lands. These plants use water, nutrients, and sunlight that would otherwise be used by native species, thus altering natural communities and ecosystems. The invasiveness of weeds is due to their genetic make-up which enables them to exploit a resource "niche," and the lack of natural enemies such as insects, diseases, and pathogens (Story, 1992). Some of the consequences of noxious weeds on public lands include effects on: productivity of native rangelands; diversity of native plant and animal species; range and population of special status plants; habitat structural diversity; soil biological crusts; scenic values; tourism; recreation; and in some cases, human health and safety. Noxious weeds degrade these uses and values by displacing native plant species, decreasing soil stability, and disrupting natural processes such as soil/water interactions, fire frequency and intensity, nutrient cycling, and energy flow.

Noxious weed species in the planning area are well-established and spreading rapidly. The local expansion of noxious weeds is part of a trend involving all of the other western states. Almost all the listed species in Central Oregon have expanded in both area and numbers of populations in the last 10 years. Weed seed is carried and spread by livestock, wildlife, wind, water, and people and their vehicles. Spread of weeds on BLM-managed lands is particularly apparent where surface soils or vegetation is disturbed. Some of the disturbance factors on BLM-managed lands are off-road vehicle travel, livestock grazing, logging, military training exercises, and construction of roads and ROWs. The expansion and density of noxious weeds appears to be increasing in direct proportion to the increase in off-road vehicle use in the planning area.

The spread of noxious weeds has been considered analogous to a biological wildfire. As with wildland fire management, a variety of tools are available for prevention and treatment. Noxious weed management within the planning area is currently in conformance with BLM's Northwest Area Noxious Weed Control Program EIS (1985 as supplemented in 1987) and the Prineville District Integrated Weed Management EA OR-053-3-062 (1994). These plans prescribe an integrated approach involving prevention, early detection, inventory, timely control (using biological, mechanical, manual, and chemical techniques), monitoring, and site rehabilitation. The selection of control methods is influenced by land management objectives, effectiveness of the control technique on the target species, size of the infestation, environmental concerns, land uses, and economics. BLM cooperates with county, state, and other federal agencies that have jurisdiction in or near the planning area.

In addition to the agency-listed noxious weed species, there are other common non-native species that are causing varying degrees of impacts to public land resources. These species include cheatgrass, tumbleweed, ragweed, and various thistles and mustards. Following is a brief description of the most important noxious weed species found in the planning area.

Spotted and diffuse knapweed are widespread, with the Bend area having the largest infestation of spotted knapweed in the state. Spotted knapweed is expanding in all directions. Diffuse knapweed is more plentiful in the northern and eastern portion of the planning area. Both produce an abundance of seed and are easily spread by vehicles.

Russian knapweed is found in patches and is more common in Crook County along riparian areas and agricultural fields. This is a deep-rooted perennial that spreads relatively slowly. It is more resistant to control methods and has no established biological control agents in Oregon.

Hoary cress invades irrigated fields and riparian areas; it is most common in Crook County. It is a deep-rooted perennial. There are no biological control agents available for this species.

Leafy spurge grows primarily in Crook County in the riparian areas of Mill Creek and the Crooked River. It also is present in the adjacent riparian areas of canals, ditches and irrigated fields. Its close proximity to water makes for difficult control.

Dalmation Toadflax is common in the Bend and Redmond areas and is expanding in all directions. Due to its very pretty yellow snapdragon-like flower, this noxious weed is often spread inadvertently by homeowners who cultivate it in flowerbeds.

Poison Hemlock is very poisonous to both humans and livestock if eaten. It is found in wet areas along rivers and irrigation ditches in the area. It poses a public health risk where it occurs in or near recreation areas.

Perennial Pepperweed and Scotch Thistle can take over large areas. Perennial pepperweed inhabits riparian areas and wet areas along canals, ditches and irrigated fields. The largest infestation is at the upper end of Prineville Reservoir. Scotch Thistle, mostly a biannual, grows to 6 or 8 ft tall and can eliminate most uses of an area.

Medusahead is a very invasive annual grass that will replace most other native range plants. This species can dominate silty or clayey soil types. It develops a silica mat of vegetation and can present an extreme fire hazard.

Yellow star thistle is an annual that quickly dominates a site by massive growth of plants from seeds after any small amount of rain. Bees are attracted to it as it blooms all summer long. Very stiff spines around flower discourage people use in area of dominance.

Puncture Vine is a common annual in Crook and Jefferson Counties. It has spiny seed pods that cause grief for bike riders or bare-footed pedestrians.

Cheatgrass, although not listed as a noxious weed, is very damaging to native landscapes. This annual was introduced from Asia. It can out-compete native grasses by its ability to germinate in the fall and early spring, by its aggressive establishment after fire or other ground disturbance, and by its production of abundant and persistent seed.

Terrestrial Wildlife Species and Habitats

Introduction

This section describes the current habitat conditions and unique features of the landscape that provide the basis for a variety of wildlife species to complete their life cycle. As previously described in the vegetation section, the planning area is characterized by several major distinct vegetative community types. These major plant communities along with non-vegetative habitats such as caves, cliffs, and lava outcrops provide a set of conditions, structure, scale, and disturbances, which affect the diversity and abundance of the wildlife associated with each habitat type.

Many wildlife species and their habitats are managed under a national priority system established by the U.S. Fish and Wildlife Service (USFWS) which provides a list of Special Status species known to occur or have available habitat in all areas of the country. Special status species are those that are proposed for listing, officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under the provisions of the Endangered Species Act (ESA) of 1973.

Additionally, the Bureau of Land Management has a policy for designating special status species and they are tiered to state agencies' and Oregon Natural History program designations. Currently, the BLM in Oregon uses three categories for special status species and they include, in order of priority, Bureau Sensitive, Bureau Assessment and Bureau Tracking.

The AMS would be too complex and lengthy if it dealt with each of the wildlife species that occur in the Upper Deschutes planning area. Thus only priority species or taxa and their associated habitats are described in this section. A list of priority animal species for the Upper Deschutes planning area is listed in the Appendix B- Special Status Species. These animals will be discussed in four broad categories of birds, mammals, amphibians, and reptiles. In each category, species discussion will be in the order of federally listed Threatened or Endangered species, special status species, and locally important species (those recognized as being of particular interest to the public).

Birds

Raptors

Raptors are a group of predatory birds that includes eagles, falcons, hawks and owls. They are a common sight in much of the planning area, and use a wide range of habitats. Many raptors are viewed as species of high public interest. Raptors and their habitats are protected under the Eagle Protection Act (1963), and the Migratory Bird Treaty Act (1918). Raptors that occur or could occur in the planning area, include two federally listed species and four species of concern.

Much of their life cycle is dedicated to breeding, nesting and raising young. Most raptors require elevated nesting sites and have historically used a variety of nesting platforms on which they construct stick nests. In the planning area nesting occurs on cliff ledges, lava rock out-crops, single large ponderosa trees, lodgepole pine thickets, juniper trees, utility poles, grasslands, wetlands and riparian associated vegetation. Foraging habits differ by species, but most raptors prey on variety of small mammals, reptiles, birds and insects.

Except for the bald eagle, no systematic inventories have been completed for raptors or their habitats, but many species have been recognized as a year-round residents of the planning area. Species present in the planning area include bald and golden eagles, osprey, ferruginous hawk, northern goshawk, Swainson's hawk, red-tailed hawk, Cooper's hawk, sharp-shinned hawk, American kestrel, northern harrier, and prairie falcon. During winter many of

these species migrate south to various wintering grounds. Central Oregon serves as a winter area for the rough-legged hawks which are seasonally abundant throughout the northern planning area. Owls are year round residents with a few species that migrate for winter. Common owls in the planning area include the great horned, great gray, long-eared, short-eared, barn, western screech, and northern saw-whet.

Eagles

In Oregon the northern bald eagle was federally listed in 1978 as a threatened species under the the Endangered Species Act (ESA) of 1973 (as amended CFR, 1988). The eagle was placed in this status as a result of destruction of habitat, harassment and disturbance, shooting, electrocution, poisoning, a declining food base, and environmental contaminants. Recovery efforts during the past two decades have increased the population above the goals of the Pacific Bald Eagle Recovery Plan (USDI 1986).

Bald eagle nesting territories are normally associated with lakes, reservoirs, or rivers. Nests are usually located in large conifers in uneven-aged, multi-storied stands with old-growth components (Anthony et al.,1982). Factors such as tree height, diameter, tree species, position on the landscape, distance from water, and distance from disturbances also appear to influence nest selection. Additionally, eagles select trees that provide vantage points from which territories can be defended. Bald eagles feed primarily on fish during the spring/ summer but may shift to waterfowl and rodents during fall and winter.

Surveys for and monitoring of nesting bald eagles have been conducted annually since 1979 by the Oregon Cooperative Wildlife Research unit, the Oregon Eagle Foundation (OEF), BLM,.and USFS. These surveys have identified three bald eagle nests on BLM-administered lands, one on USFS-administered lands, and three on privately owned lands within the planning area. Additionally, four nests have been located on USFS and private lands within two miles of the planning boundary.

Two of the three nests on BLM lands occur immediately adjacent to major water sources where recreationists could influence eagle occupancy. The other nest site requires the eagles to travel longer distances for foraging, yet have been successful at raising young the past several years (Isaacs survey records, 1991-2001).

The golden eagle is a species of high public interest and is protected under the Eagle Protection Act (1963), and the Migratory Bird Treaty Act (1918). Golden eagles are a year round resident and construct large stick nests mainly on cliffs and sometimes in large conifers. Golden eagles prefer open shrub/grasslands, and open woodlands where they prey on rabbits and hares, marmots, squirrels and other small to medium-sized animals.

Systematic inventories have not been conducted for golden eagles or their habitats, however, nests sites have been found in the planning area on canyon rims (rock ledges), old-growth juniper trees and large single ponderosa pine trees. BLM works with ODFW and volunteers to monitor some of these nests annually. Golden eagles are sensitive to human disturbances during the breeding season and they often nest in areas popular for recreational activities.

Peregrine Falcon

The peregrine falcon (Bureau Sensitive) was federally listed as an endangered species throughout its range and as a state endangered species. However, in 1999, the peregrine falcon was de-listed after recovery efforts helped the population achieve the recovery goals set forth in the 1982 Pacific Coast Recovery Plan for the American Peregrine Falcon.

The peregrine falcon is a cliff-nesting species, preferring tall cliffs with ledges, or small caves that are suitable for constructing a nest scrape (USFWS 1982). Nest sites are usually associated with cliffs near water with an abundant population of nongame birds, shorebirds,

and waterfowl, the peregrine's primary prey. Raptor surveys conducted throughout Central Oregon have determined that suitable habitats exists, but no nests sites were found. Peregrine falcons can be observed in the planning area during winter migration.

Northern Spotted Owl

The Northern spotted owl is a threatened species throughout its range which includes the eastern slopes of the Cascade range. The planning area is located outside the range of the spotted owl. Limited surveys have been done on BLM lands in the planning area and no detections were observed.

Ferruginous hawk

The ferruginous hawk (Bureau Sensitive) occurs in the northern planning area. Although they do not occur in large numbers, these birds are found annually nesting on BLM. Ferruginous hawks commonly occur in juniper woodlands, shrub-steppe, grasslands, and sometimes can be located near water. The juniper/shrub steppe ecotone provides trees for nesting and are usually adjacent to open foraging areas (Powers et al., 1975; Thurow et al., 1980). These hawks use a wide variety of habitats for foraging but prefer to hunt in grasslands and open woodlands and prey on small mammals such as rabbits, ground squirrels, gophers, and kangaroo rats. No surveys have been conducted, but several nest sites have been documented in the northern planning area. Most nests occur in old growth or large juniper trees.

Northern Goshawk

The northern goshawk (Bureau Sensitive) occurs both in the northern planning area and the La Pine block. Goshawks, normally a forest bird, are common in coniferous forests, but will also use aspen groves, desert mountain ranges and dense juniper woodlands. Goshawk nests are usually located in the fork of a tree limb near the trunk of the tree. Diet consists of both birds and small mammals. Surveys have located several nests in the La Pine area. No surveys have been conducted in the northern portion of the planning area but there are two known nests sites that have been active the past several years.

Prairie Falcons

Prairie falcons are common in the planning area and protected under the Migratory Bird Treaty Act. They typically inhabit arid deserts and open grasslands they use cliffs for nesting habitat. A cliff is any vertical rock face or structure that may exist as rock spires, vertical scarps, volcanic dikes, or large lava blisters. These falcons are opportunistic feeders that can take small mammals up to the size of jack rabbits but mainly forage small mammals and birds, lizards and grasshoppers.

No systematic inventories have been completed for prairie falcons but several known nest sites are monitored annually. BLM coordinates with ODFW and volunteers to monitor these nests. These nest sites mainly occur on cliff faces in river canyons but there are several known nests in lava blisters, and small rim-rock escarpments.

Flammulated Owl

Little is know about flammulated owls (Bureau Sensitive) in the planning area. Flammulated owls use open conifer forests and appear to prefer ponderosa pine. It requires fairly large trees for roosting that are adjacent to patches of grassland or meadow, where it forages. This owl is mainly an insectivore, preferring grasshoppers and moths, but also eating beetles, crickets, spiders, and occasionally small mammals and birds. A limited amount of survey has been done in portions of La Pine block with no locations found. No known nesting occurs in the planning area.

Burrowing owls

Burrowing owls (Bureau Sensitive) historically occurred in the planning area but there have been no sightings in the past several decades. They prefer open grassland habitats where they feed mainly on small mammals and insects.

The major impacts to raptors or their habitat are disturbances near the nest during the nesting season. Disturbances are usually a result of human uses such as mining, motorized vehicles (OHVs), rock or cliff climbing, equestrian rides, target shooting, boating, and hiking. In general, habitat conditions have remained relatively stable in the planning area, but human uses are increasing near known nesting areas. During the past several years, golden eagles and prairie falcons have changed nesting sites in areas of high recreational use, suggesting that increasing disturbances may effect nest locations and productivity.

Several known nests sites are monitored annually, usually related to areas of high recreational use. BLM coordinates with ODFW and volunteers to monitor these nests and seasonal closures have been put in place to protect these important reproductive habitats.

Northern Pygmy Owl

The northern pygmy owl (Bureau Sensitive) is a small owl that will hunt by day and nests in tree cavities. Like most owls, the Pygmy owl does not create nesting cavities so it depends on woodpeckers, nuthatches and natural decay processes. This owl inhabits moist forest types, riparian woodlands, as well as drier ponderosa pine forests. This species will move to lower elevations during winter and will also make use of juniper and aspen stands. Past forestry practices that removed dead standing and live trees with internal decay have impacted nesting habitat for this species. Current federal land management practices include conservation measures for their nesting habitats.

Upland Gamebirds

A variety of upland gamebirds occur within the planning area, using all of the vegetation types in the area. These birds are hunted for sport and regulated by ODFW. Species that occur in the planning area include native sage grouse, ruffed grouse, valley and mountain quail, and introduced ring-necked pheasant, wild turkey, chukar and gray partridge. Sage grouse and mountain quail are species of concern and will be the only ones from this group covered in detail.

Upland gamebirds are ground nesters and construct nests in a shallow depressions on the ground concealed in thick vegetation of grasses or shrubs. Composition of the diets vary by species but gamebirds forage on a variety of plant parts along with insects, such as grasshoppers, beetles and ants. Flowering plants (called forbs) are a main food source and have very high nutritional content.

Sage Grouse

Throughout its range, sage grouse (Bureau Assessment) is a species of high public interest and may be petitioned for federal listing as either a threatened or endangered species. National interest and concerns have led BLM to work with state and federal agencies and private interest groups to develop short term management guidelines. Current efforts are now formulating on long-term management goals and objectives for sage grouse.

Sage grouse is a western bird that relies primarily on sagebrush for its nutritional and habitat needs and are considered an “obligate species” or “indicator species”. This means their population success can be directly tied to the environmental conditions of the sage-steppe habitats they occupy.

Sage grouse are found throughout the range of big sagebrush, but numbers throughout the west have been declining for many years. These declines are primarily due to loss, degradation, and fragmentation of habitat (Wallestad 1975a). From the late 1800s through 1931, degradation of habitat from grazing and excessive harvest caused severe declines of sage grouse populations (Edminster 1954). By 1940, sage grouse occupied only half their historic range in Oregon, and numbers declined 60 percent between the late 1950s and the early 1980s (Crawford and Lutz 1985). These declines led the USFWS to list the western subspecies of sage grouse as a candidate for threatened and endangered status (Federal Register, 18 September 1985).

Sagebrush is the most important plant to sage grouse because they use it for food and cover all year long. Grouse like to eat small flowering plants (called forbs) when available, usually from early spring to mid summer. Sage grouse also feed on forbs that grow in the sagebrush plant community and they contain high nutrient levels and are easily digestible.

Sage grouse prefer large blocks of sagebrush habitat in late seral condition. Association with dense sagebrush stands typically begins in September and continues through the breeding season. Wintering areas are crucial to sage grouse because they are a major factor in determining their distribution. Elimination of winter range habitat can reduce sage grouse populations over large areas (Eng and Schladweiler 1972).

Quality nesting habitat is one of the most important factors in the success of sage grouse populations. A primary function of nesting habitat is the protection of the hen and her nest from predation, which is the primary factor influencing sage grouse nesting success in Oregon (Batterson and Morse 1948, Nelson 1955). While predation may be the most immediate cause of nest failure, the underlying cause may be a lack of adequate cover at nests that makes them easier to see and more vulnerable to predation (Gregg et al., 1994).

The BLM manages approximately 90 percent of the lands currently inhabited by sage grouse (Hanf et al. 1994). Beginning in the 1940s, the Prineville District, BLM in cooperation with ODFW has monitored sage grouse populations through annual strutting ground counts, referred to as "Leks." Approximately 15 percent of the northern planning area is currently used by sage grouse and is mapped as sage grouse range (See Map 7-Sage Grouse Habitat). Within the planning area, grouse occur in the Skeleton fire area, Millican Valley, West Butte, Bear Butte, and Pine Mountain. This population is considered to be located on the western fringe of their range.

In the planning area, grouse numbers have varied over the years due to several factors including: drought; predation; habitat loss and degradation; and natural population fluctuations. In Oregon, the BLM Prineville District began a sage grouse study in 1988 because of declines in the number of males on leks. The purpose of the study was to define seasonal use areas and determine the overwintering population.

Studies in the planning area identified several important seasonal use areas, located new strutting grounds, and helped determine grouse distribution and suitable habitat types. Currently, four leks are used for breeding. The largest of which occurs in Millican Valley. Used year after year, these sites are important to protect for future use. Studies in Wyoming indicate that disturbances on and around the lek that removes substantial vegetation could affect the local populations to the point of extinction (Higby, 1969).

The highest percentage of nesting occurred in the higher elevation areas surrounding Millican Valley where important nesting included Pine Mountain, Horse Ridge, West Butte and Bear Butte. Sage grouse nest in the mountain big sagebrush, mountain shrub, and grassland cover types, and the nest center of successful nests had taller grass and more tall shrubs than the nest center of unsuccessful nests (Hanf et al., 1994). Habitat structure

appeared to be as important to nest success than habitat type. These same high elevation areas are important for brood rearing as well, where forbs were more abundant and available throughout the summer.

Millican Valley is a very important area for the winter survival of sage grouse where over 100 birds spend their winter. Comparatively mild weather and fairly good sagebrush cover is the primary reason for this seasonal use.

Habitat quality is variable within the known use areas. The low elevation valley floors have a large component of annual plants and rabbitbrush, which is not ideal habitat for sage grouse but does provide cover during winter and forage during the early spring. The higher elevation areas are in good to excellent condition and have an abundance of important forbs.

The greatest effect on sage grouse is the destruction or adverse modification of their habitat. During the past 40 years, sagebrush valleys and foothills have been sprayed, plowed, chained, burned, disked, or cut in an attempt to convert these ranges to grasslands. Recent habitat protection and prescribed burns appear to be benefitting the sage grouse in the planning area. In the Millican and West buttes area, a large percentage of lands are in mixed ownership between BLM administered and private lands.

Lek viewing has become popular in the Millican area. BLM has been monitoring established viewing opportunities since 1995. Conflicts between humans and grouse viewers have prompted viewing restrictions to allow grouse to complete breeding. Recent management efforts have resulted in better viewing and less disturbance to the birds.

Vegetation management projects have been done to improve sage grouse habitat. In the Horse Ridge and West Buttes area, projects such as prescribed fire, lek mowing, and water developments have improved habitat for sage grouse.

Mountain Quail

Mountain quail (Bureau Tracking) prefer open forests and woodlands with a brushy understory (Csuti et al., 1997). In eastern and cental Oregon, these quail can be found in close association with riparian areas, or meadows next to forest edges. Their preferred food consist of buds and flowers, berries, and insects such as grasshoppers, beetles and ants. During winter, seeds of a variety of plants make up most of the diet. Mountain quail are ground nesting birds and generally have very small home ranges (often staying within 1 square mile).

Mountain quail were once abundant throughout many areas in central and eastern Oregon. Numbers have been declining for several decades (ODFW, Bend), and the factors causing these declines are not fully understood. Although not common, mountain quail exist in several areas within the northern planning boundary. Small populations can be found in and near Bear Creek, Prineville Reservoir, and on scattered parcels of BLM lands north of Prineville, and north and east of Sisters. These quail exist in drainages with some amount of shrub type vegetation, brushy areas at the base of rimrock ledges, and around brushy seeps or springs. The planning area has not been surveyed for mountain quail and their population size and distribution is poorly known.

Although mountain quail are a gamebird in Oregon, most populations in eastern Oregon are closed to hunting with exception of Wallowa and Hood counties. Although the effects are not known, development of privates lands are occurring near several local populations of mountain quail.

Neo-tropical Migrants

This groups of species represent those birds that breed and raise young in the planning area in the spring and summer, then migrate south to areas in Mexico and South America during the fall and winter. These birds range from small sparrows and warblers to large woodpeckers and raptors.

Other Bureau Sensitive Birds

Pygmy Nuthatch

The pygmy nuthatch (Bureau Sensitive) is one of three resident nuthatches that occurs in the planning area. The pygmy nuthatch uses open coniferous woodlands and in Oregon they are believed to be tied to ponderosa pine communities. This is a cavity nesting species that creates its own nest sites and typically feeds on insects.

A large number of species fall into this grouping and occupy a large variety of habitats. Discussions will be directed towards those species with priority status.

Recognized as one of the most important habitats for these birds are the riparian plant communities lining the rivers, creeks, and irrigation canals. Relatively minor in terms of total acres in the planning area (only 1 percent of landscape), these areas provide breeding habitat for more species of birds than any other vegetation type in North America. Up to 75 percent of bird species breed in riparian zones (Johnson and O'neil, 2001). Primarily in deciduous riparian woodland, abundance of breeding birds can be 10 times greater than the surrounding uplands.

As previously described in the vegetation section, the shrub zone and its associated understory vegetation provides the basic habitat needs for a vast number of wildlife species. In addition, the unique presence of the juniper woodlands, in both its natural old growth form and the younger invasive type, provides more structure to the environment, which many wildlife species find attractive.

Many species of breeding birds are dependent upon sagebrush as their primary habitat. Several passerine birds depend on shrubs for most of their life cycle. These birds nest in the fields and forage on seeds, buds, or insects in the area. Pure stands of big sagebrush occur in the Millican and Horse Ridge area, the Badlands WSA, and west of Redmond. Certain species are "sagebrush obligates", which means they depend on sagebrush for cover and forage for part or all of their life cycle. Species common in these habitats include sage, Brewer's and vesper sparrows, sage thrashers, and green-tailed towhees. Horned larks are abundant throughout the planning area in the shrub steppe zones.

The low sagebrush areas, located near Prineville and the Bear Buttes area, are in excellent range condition, rich in forbs and are providing important foraging areas for neotropical migrants.

Old-growth juniper woodlands provide valuable wildlife habitat for a diverse mix of species. As a juniper tree matures and becomes decadent, structural changes occur which result in hollow cavities and other protected niches where birds can take shelter, nest, and rear their young. Many bird species forage on juniper berries. Wildlife studies in central Oregon have determined that old-growth juniper attracts a high diversity and abundance of wildlife, including mountain chickadees, Cassin's finches, shipping sparrows, dark-eyed juncos, house finches, mourning doves, brown headed cowbirds, ash-throated flycatchers, pinyon jays, northern flickers, and red-breasted nuthatches.

In La Pine, dead standing trees or snags are widely recognized as essential habitat for many wildlife species. Retention of snags and down logs is needed to support cavity-nesting

species such as hairy and white headed woodpeckers, pygmy nuthatch and mountain chickadee. Grasses, forbs and shrubs typically invade in the treated forest areas. These areas provide habitat for a unique subset of wildlife species. Ongoing changes to these important plant communities, many of them caused by humans, have resulted in alterations to the habitat within the planning area. Encroachment of juniper is converting shrublands to woodlands, primarily because of changes in natural fire regimes.

The loss of vegetation reduces forage needed for wildlife and livestock, as well as habitat for ground nesting birds. Juniper dominated sites can eventually reach a point where understory vegetation is spare and will not carry fire, and remnant grasses and forbs are not capable of repopulating the area even if the juniper were removed. Species composition has been altered in these areas throughout the planning area.

The Olive-sided flycatcher (Bureau Tracking) is found in several locations in the planning area. Although not found to be abundant, this flycatcher can be seen in forest habitats near La Pine, Bend, and Redmond, and is suspected to occur on BLM lands north of Sisters. These birds like to forage on bees, flying ants, flies, small beetles, mosquitoes, and other flying insects (Csuti et al., 1997). No surveys have been conducted for this species, therefore population size and range is unknown.

Willow flycatchers (Bureau Tracking) are less common in the planning area. Typical habitat occurs around willows at the edges of streams, meadows and marshes. This bird prefers thick vegetation around water. Except for the major river corridors and a few ponds and canals, preferred habitat does not occur in quantity or quality. No surveys have been conducted for this species, therefore population size and range is unknown.

Sage sparrows (Bureau Tracking) are considered sagebrush obligates. Although sage sparrows can be found in grasslands they are usually not far from sage stands. Sage sparrows eat soft bodied insects, green foliage, and seeds usually found on the ground (Csuti et al., 1997). Sage sparrows are common in the pure stands of big sagebrush near Millican and Horse Ridge area, the Badlands WSA, and west of Redmond. Sage sparrow populations are thought to be declining throughout its range. No surveys have been conducted for this species, therefore population size and range size is unknown.

White-headed woodpecker (Bureau Sensitive), a species of concern, is found in both the La Pine block and the northern planning area. This species is closely associated with ponderosa pine or ponderosa mixed conifer stands (Csuti et. al., 1997). It requires large trees for foraging and snags for nesting, both characteristics of older forest stands. The woodpecker forages mostly on insects and seeds of ponderosa pine. Known occurrences of this bird have been documented around Pine Mountain, scattered BLM lands north of sisters, and in the La Pine area. No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

Black-back and three-toed woodpeckers (Bureau Sensitive) normally occur in forests of fir, lodgepole and ponderosa pine, or mixed conifers (Csuti et al., 1997). Diet consist of wood-boring beetle and their larvae, ants, spiders, and occasionally fruit, bark, seeds, and cambium. Surveys conducted by BLM personnel in the La Pine block found that the black-backed woodpeckers are common to abundant throughout the area.

Three-toed woodpeckers also occur in La Pine but in fewer numbers. These birds were found using lodgepole pine and ponderosa pine habitats. The abundance of wood-boring beetles in this area is most likely the reason these woodpeckers occur here. Potential habitat occurs in the northern planning area north of Sisters, but no surveys have been conducted. Burned areas that occur in the La Pine area provide feeding and nesting potential for three-toed and black-backed woodpeckers. Lack of fire on BLM lands has not allowed for habitat improvement for these species of woodpeckers.

The Lewis woodpecker (Bureau Sensitive) occur occasionally in both the northern planning area and the La Pine block. Typical habitat is in white oak woodlands, but they are also found in ponderosa pine, and cottonwood riparian woodlands in eastern Oregon (Csuti et. at, 1997). Their diet consist of beetles, ants, grasshoppers, flies, and spiders. Lewis woodpeckers occur around the cities of Bend, Redmond, and La Pine and along the Deschutes River corridor. No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

Yellow rail (Bureau Sensitive) occurs occasionally in the planning area. Observations have been made in the La Pine area, and in ponds and canals near Redmond. Typical habitat is freshwater marshes and wet meadows with a growth of sedges and willows, and they utilize shallow bodies of water (Csuti et al., 1997). Although this bird occurs in small numbers, pairs have been found breeding and raising young in central Oregon (Schmidt, personal communication). No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

The Yellow-billed Cuckoo (Bureau Sensitive) is unlikely to be found in the planning area, however, potential habitat could possibly be found on BLM administered lands. There are no reported sightings of this species in the planning area. This species occupies dense closed-canopy riparian areas with various species of willows (Csuti et al., 1997). No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

The Upland Sandpiper (Bureau Sensitive) has potential habitat in the La Pine block and there has been a single sighting there (Demmer, personal communication). This species occupies flooded meadows and grasslands, usually with a fringe of trees and often near high elevation sagebrush stands (Csuti et al., 1997). No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

Mammals

Bats

Bats are a unique form of terrestrial animals and an important part of the ecosystem by their consumption of a variety of insects. There are two types of bats in Oregon, colonial type bats like the little brown bat, pallid bat, Brazilian free-tailed bat, western pipistrelle, and the solitary types, including the hoary bat, and silver-haired bats. Although, some bats use trees for roosting, most bats rely on a variety of non-tree like structures including cliffs, lava outcrops, caves, mines, bridges, and buildings (Perkins 1984).

Management of bat populations is dependent upon the availability of roosting and foraging areas (Perkins 1996). The diet of most of the bats in planning area include cutworm moths, pine bark beetles, crane flies, biting flies, and mosquitoes (Perkins, 1996). In urban areas, most bat species are found in smaller numbers and at fewer locations when compared to rural locations. This may be the result of lower insect numbers and diversity (Johnson and O'Neal 2001). Except in a number of known caves, little is known about the distribution, and species diversity of bats in the planning area.

Bats may use these habitats in several ways. The most obvious use is as a daytime resting place (roost) for these nocturnally active animals. This occurs during the warm part of the year when they are most active. Another use during this time of year is as a temporary resting place at night between foraging bouts. Such use may vary seasonally depending on the ability for year round protection from weather and predators. Sometimes, an infrequently used summer roosting site will be attractive to bats in the fall, especially at night, when they congregate for breeding. Caves provide year round habitat but are a major source for hibernaculum of dormant bats during the winter. Most species have specific habitat

requirements for such use, and will use different parts of a cave depending on temperature and other factors.

In the planning area, mines, cliffs, caves, lava tubes and lava outcrops are the key habitats for a variety of bats. A mist netting survey conducted by Cross in 1976 *(A Survey of Bat Populations and Their Habitat Preferences in Southern Oregon*) revealed 10 species of bats found on BLM-managed lands. These species included Townsend's big-eared, big brown, silver-haired, pallid, California myotis, long-eared myotis, small-footed myotis, long-legged myotis, little brown myotis, and the yuma myotis. Perkins surveyed historical hibernacula and roost site locations in 1986 (Central Oregon Survey for Townsend's Big-Eared Bat).

Perkins (1986) pointed out that cave habitats in Oregon have not been managed specifically as habitat for bats and are subject to increasing human disturbance, which could result in a decline of available habitat for bats. Inventories to establish a complete distribution of the Townsend's big-eared and other bat species on BLM lands are needed before habitat protection can be provided.

Disturbances from humans and domestic cats are major problems for bats in urban setting, because of disturbances to night roost sites, maternity sites, and hibernaculas. Bats use snags and large trees with structural defects for roosting, and typically use areas with less canopy closure and understory vegetation and are close to water.

Townsend's big-eared bat (Bureau Sensitive) has received special attention from local biologists. These bats occur in a wide variety of habitat types from arid desert shrub communities to pine forests. This species uses caves and cave-like structures, including abandoned mine shafts and tunnels for summer roosting and hibernating or wintering habitat. Caves are a critical component of this bat's habitat requirements, both as hibernaculum in the winter and as roosts for summer nursery colonies. They also require wet meadows and riparian areas where they can forage for flying insects. Habitats free from human disturbance are apparently required by this species. Surveys have been conducted in many areas within the planning boundary. More than 25 percent of the entire population of this species occurs in central Oregon.

Seven additional bats have Bureau status including one Bureau Assessment (Brazilian Free-tailed bat) and six Bureau Tracking speicies (pallid and silver-haired bats, western small-footed, long-eared, long-legged and yuma myotis bats). Surveys conducted in a variety of locations in the planning area have shown some of these bats to occur. The majority of the species can be found in the area associated with caves and lava formations. The silver-haired bat is the only one that is dependant on trees for roosting (Perkins and Cross 1988). During the summer months, many of these bats can be found near persistent water sources. Surveys at Reynolds and Mayfield ponds found bats to be abundant near these sources in June through September (Perkins 1996).

Although several surveys have been conducted in the planning area, the full extent of the population range and abundance of these sensitive bat species has not been determined. Special management areas have been implemented which closed several caves to human uses and protects known populations of bats using the caves as a hibernaculum and nursery purposes.

Populations of the pygmy rabbit (Bureau Assessment) have been declining throughout its range over the past several decades. Potential habitat occurs in the planning area, in which typical habitat for these rabbits is described as areas supporting dense and tall clumps of basin big sagebrush, and areas with deep soils in which the pygmy rabbit use to dig their burrows (Csuti et. at, 1997). Although habitat does occur in many parts of the planning area, only unconfirmed siting have been made in the eastern portion of the northern planning area. Only localized surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

The range of the Preble's shrew (Bureau Tracking) includes the entire planning area. Typical habitat is near permanent or intermittent streams in arid or semi-arid shrub and shrub/grassland habitats (Csuti et al., 1997). There have been no studies on diet of this shrew and little is known about its range, and use of habitats. No surveys have been conducted in the planning area, therefore the extent of the population is unknown.

Big Game

Mule Deer

Mule deer, along with white-tailed and black-tailed deer, are considered North America's premier big-game species (Wallmo, 1981). The public has a high level of interest in this species for hunting and viewing. However, in some suburban and agricultural areas, the deer can become a pest, as it feeds in alfalfa fields, home gardens, and browses residential shrubs. Deer are the most numerous, adaptable, and widely distributed big game species. The majority of mule deer found on the planning resource area are part of the migratory herd that migrates through or use seasonal winter ranges. Local herds that reside year-round are usually located near agricultural areas.

Adequate food, water, and cover are essential to the survival of deer. Where food, cover, and water are close together, the range of deer is small. However, home ranges of resident mule deer can be large. If snow conditions make higher elevations unsuitable, deer will move to suitable range in lower elevations. In general, higher elevations are used as summer ranges and areas below 4,500 feet are considered winter range (See Map 7-Deer Habitat and Winter Range). Seasonal movements and routes can be critical to maintaining migratory habitat.

The value of timberland for deer is proportional to the degree that it is broken and interspersed with openings. Deer numbers on forested lands are usually highest where openings that support low-growing palatable shrubs and forbs are scattered through the forest.

Thermal cover is critical on winter range to provide protection from wind and other adverse elements. Grassy slopes, meadows, brush fields, and other early successional stages provide the majority of deer forage. During hot summer weather thermal cover provided by late, mature, old-growth seral stage forests, and juniper/big sage/antelope bitterbrush shrublands provide shade and reduce heat stress on the animals.

Habitat conditions on the winter ranges within the planning area vary considerably and are site specific. It is generally recognized by wildlife biologists and range managers that it is extremely difficult to precisely measure habitat condition and productivity and even more difficult to relate these measures to herd parameters (Carpenter and Wallmo, 1981). The winter range is primarily juniper woodland and sagebrush communities with interspersed grasses. Browse is the major component of the winter diet, primarily antelope bitterbrush, big sagebrush, and western juniper.

While comprehensive monitoring data is lacking on browse condition and habitat condition and trend on mule deer range, it is known that the type, amount, and condition of vegetation have changed due to aggressive fire suppression. Due to fire suppression on some mule deer wintering areas, bitterbrush is old and dying and little reproduction is occurring. There is very little reproduction in the stands in the form of seedling establishment and many of the browse plants are growing out of the reach of deer. The stands are still producing some browse for wintering deer and the decaying and dead plants are providing valuable thermal and hiding cover.

A minimum cover to forage ratio of 30 to 70 was set in a Memorandum of Understanding with ODF&W in 1990 to protect big game migratory habitat. Desired cover to forage ratios are documented at 40 to 60 by Thomas et al., (1979) and at 45 to 55 by Leckenby et al., (1982). On the big game travel corridor areas near La Pine State Recreation Area and south

from La Pine, 51 percent and 37 percent respectively, of BLM managed public land remains as hiding cover. However, stands are deficient in meeting cover requirements because of the long distances animals must travel between patches.

In the planning area four mule deer winter ranges have been identified by ODFW and nine winter areas that have been designated by BLM as crucial deer winter range. Mule deer winter range is established because they are unique and important to the health of the mule deer population.

Mule deer migration corridor in the La Pine management area receives use by 21,500 migrating mule deer annually (ODF&W, 2001). Mule deer descend from summer range on the eastern slopes of the Cascades to their lower elevation winter ranges. Use is concentrated in the area immediately south of Lava Butte near the La Pine State Recreation Area and between La Pine and Gilchrist. Mule deer populations are presently below ODF&W management objective numbers.

South of U.S. Highway 20, approximately 5,360 acres of public land lies within the boundary of the Tumalo Mule Deer Winter Range. Management objective for this area is 2,500 deer. Currently, numbers are just under the objective. Motorized vehicle use has been restricted from December 1 through March 31 annually on many roads within the winter range. Motor vehicle use disturbs wintering mule deer during this time period.

The North Paulina Winter Range includes 3,750 acres of BLM managed public land in the Bend-Redmond management area. Management objective are for 5,500 deer.

The northern portion of the Cline Buttes management area contains 9,240 acres designated as a portion of the Metolius Mule Deer Winter Range. Management objectives for this area are 6,200 deer.

The Smith Rock management area is designated by ODFW as mule deer winter range. It is estimated to have approximately 175 mule deer in this area. However, the areas believed to be capable of supporting approximately 200 wintering mule deer (ODF&W, 1994). Mule deer use a combination of both public and private lands, including the adjacent Crooked River National Grassland (CRNG) of the Ochoco National Forest.

Mule deer and elk frequent many areas around La Pine. Two major migration corridors have been identified in the La Pine area. These two corridors run for approximately 15 miles starting about 4 miles north of La Pine down to just north of Gilcrest. These corridors serve as connective habitats for the winter movement of animals traveling from the Cascade Mountains east to their winter ranges.

Harassment of deer by humans using motorized vehicles during stress periods, such as cold winters and hot summers can impact deer but it is difficult to quantify. Seasonal road closures are important to protect wintering deer from harassment and to protect wildlife habitat from trampling impacts. The road closures are in effect each year from December 1 through March 31 and have been successful in reducing harassment and poaching.

Fall transition ranges are vegetatively similar to summer ranges and include coniferous forest/shrub communities. Deer tend to remain at the highest possible elevations until forced onto winter concentration areas by snowfall.

As the human population increases in the urban interface, conflicts with wintering and resident mule deer have also increased. Developments which subdivide the land restrict passage by mule deer and Rights-of-Ways issued on public land bring humans into closer contact with wildlife. In some suburban and agricultural areas, the species can become a pest, as it feeds in alfalfa fields, home gardens, and browses residential shrubbery.

In areas where public and private ownerships are interspersed, public lands often serve as habitat islands for wildlife. Mule deer may forage on adjacent private alfalfa fields but retreat to BLM land for safety and cover.

Rocky Mountain Elk

Elk can be found throughout the planning area in all vegetation types. Although, juniper woodlands is not considered "ideal" habitat, elk have adapted to this environment and have been rapidly expanding in this area for the past 10 to 20 years. A combination of factors have increased foraging opportunities for elk and may be contributing to their expansion in the area. The development of agriculture and small ranches adjacent to large blocks of public lands provide green forage and increase the availability of water nearly year round. Healthy populations of elk in the Ochocos have been expanding into juniper and sagebrush habitats during the past 15 years.

Additionally, habitat improvement projects on public lands have made these lands more attractive to elk. Juniper management, timber harvest, heavy fuel reductions, prescribed burns, natural wildfire, guzzler installations, native shrub and grass plantings, and increased travel management restrictions have all contributed to better habitat conditions attractive to local elk herds.

Elk are considered grazers and mainly feed on grasses. During the spring and summer, elk forage on a variety of plants including forbs and grasses, and in the winter they use sagebrush, bitterbrush, grasses and agricultural lands.

Although elk occur throughout the planning area they are most abundant in areas east of U.S. Highway 97 and in the La Pine area. Elk tend to occur in small groups but can also be found in herds of 150 to 200 animals. Resident herds are most often found in areas around the Badlands, West Buttes, Powell Buttes, Mayfield Pond/Alfalfa area, Millican Plateau, Combs Flat/Juniper Canyon area, Ochoco Reservoir, and Prineville Reservoir.

During the winter, elk concentrate in larger herds and several wintering areas have been identified and are recognized as important by ODFW. Oregon Department of Fish and Wildlife conduct surveys twice a year, during August and early March, to determine herd composition and productivity. Elk numbers are currently at 20 percent above the management objective for this area.

In the Powell Buttes, Mayfield Pond and Alfalfa areas, disturbances such as old burns, seeded gas pipelines and military use has created increased foraging opportunities here during the past decade. Low road density, limited public access, rough road conditions, large blocks of undeveloped lands, and relatively low human disturbance are probable factors for the successful establishment of this herd.

Another large grouping of elk occur in the northern part of the Badlands extending north through the Millican Plateau, West and Bear Buttes, and sometimes cross U.S. Highway 20 into the Horse Ridge area. These animals generally occur as two groups totaling about 250 to 300 animals. The largest number of animals use the Millican Plateau between Reservoir Road and Prineville. Habitat here is big sagebrush mixed in old growth and invasive juniper woodlands. Disturbances such as old burns, crested wheatgrass seedings, juniper cutting on private lands, and large powerline corridors have created increased foraging opportunities here during the past decade of elk expansion. Road densities are higher in this area than surrounding areas, but off road use is currently limited to designated roads and trails associated with the Millican OHV area. Several wildlife guzzlers occur in this area providing water year round. The area east of Millican road is designated as crucial antelope winter range and is used heavily during the winter.

In the Combs Flat/Juniper Canyon, Eagle Rock/Prineville Reservoir areas ownership is a mix of BLM, state and private lands. This area is mostly private ranches. The elk in this area occur in scattered groups for most of the year but congregate into agricultural fields during the summer and fall months. Only small isolated tracts of BLM lands occur north of Ochoco Reservoir. The habitat here is a mix of pine, juniper and big and low sagebrush.

Herd migration and intermixing opportunities are limited throughout the planning area due to increased development of private lands and the mixed ownership pattern. Elk do not tend to use distinct travel corridors but in some areas have developed trails from hiding cover to foraging areas. Increasing human development has resulted in increased density of fences on private lands designed for livestock containment or protection of structures, which forces animals around private lands.

Conflicts have started to arise with the expanding elk populations. When disturbed, elk run through fences instead of jumping over them causing a lot of damage. Also, in the summer and fall these elk are traveling in large groups and when grazing in agricultural fields they can cause financial losses to ranchers. Elk are found using agricultural fields throughout the entire planning area.

There are approximately 200 to 250 elk using in the Clines Buttes area (west of 97 in the northen planning area). These animals often travel throughout the area between Tumalo, Cline buttes, and the lower bridge area. These animals use BLM and Forest Service lands for hiding, escape and resting cover, while foraging on agricultural lands. Herd sizes vary but elk generally travel in groups of 30 to 40 animals and sometimes use small local areas. Elk numbers are currently exceeding the Management Objectives for the area and the number of crop damage complaints are rising in the area (Steven George, ODFW). Seasonal use areas and important wintering areas have not been determined for these animals. Additionally, there are no distinct migration routes in this area, and the elk don't stay in one particular area for very long.

Elk numbers are increasing in the La Pine area during the past 10-12 years. The Brothers/La Pine RMP states that in 1982 numbers of elk were around 70 animals. Currently 150 to 200 elk reside in and around the La Pine and readily travel back and forth across U.S. Highway 97. Water is available but in some cases elk foraging east of 97 must cross the highway to get water from wildlife guzzlers. The Little Deschutes River, wet meadows and springs also provide year round water.

Timber cutting in the area has created ideal cover to forage ratios encouraging the elk to stay in the area. No areas have been identified as important seasonal habitats. Increasing bitterbrush, grass and forbs in the treated areas has added to the ability for elk to flourish. Elk the use the same corridors as deer in areas with sufficient connective habitat.

BLM lands are scattered throughout the Grizzly Mountain and Grey Butte areas where elk use undisturbed private lands and the national Grasslands. Herds have been expanding in this area and crop damage is a concern.

Pronghorn Antelope

Pronghorn antelope can be found throughout the planning area in juniper occupied shrub zones. Although, juniper woodlands are not considered "ideal" habitat, pronghorns have adapted to this environment and have been expanding in this area for the past 10-15 years. Certain types of disturbances in local areas have increased foraging opportunities for antelope which may be contributing to their expansion in the area. Possible features or disturbances attracting antelope into juniper shrublands are water availability, crested wheatgrass seedings, natural and prescribed fires, agricultural fields, forb rich disturbed areas, and large blocks of undeveloped lands.

Typical antelope range is an open sagebrush environment that is rich in broad-leaved herbaceous vegetation. Antelope forage primarily on forbs and grasses during the spring and early summer. The rest of the year, antelope are dependant upon sagebrush, bitterbrush, and grass. Low sagebrush is usually an important component of their habitat and diet but only occurs in eight percent of the planning area.

Antelope are usually found in close proximity to water which is sparsely distributed throughout the area. Climates that reflect the best habitats and productivity are in areas that receive 10-16 inches of precipitation a per year (Sundstrom, et al., 1973). The average local precipitation levels vary across the antelope habitat in the planning area from 8.62 inches per year in Redmond to a high of 11.70 inches per year in Bend. Average precipitation is about 10 inches per year in the Millican and Prineville areas (State Climate Data).

In the planning area, home ranges of summer herds vary from 10 to 20 square miles and antelope generally form small groups of 4 to10 animals. During winter antelope gather into larger herds using specific geographic areas. Several of these wintering areas have been designated as crucial winter range for antelope by ODFW and BLM. Winter home ranges tend to be smaller except for temporary movements. During winter, antelope have been seen migrating in large groups (up to 130 animals) between winter areas, but usually for short periods of time.

During the past several years, ODFW has conducted surveys during August and early March to determine herd composition and productivity. The BLM and ODFW have used this antelope census data and other observation data to map the potential antelope habitat in the planning area, and the current known use areas. Antelope currently use 40 percent of their potential habitat in the planning area.

Antelope productivity and recruitment is low within the planning area compared to typical "open range" habitats more common to the Great Basin area to the east and south of the planning area. Common factors that can limit productivity are predation, fences, distribution of water, and low precipitation levels causing poor forage quality (Ferrel, 1952). Deming (1959) believed that climate and range conditions were possible reasons for low antelope productivity on marginal ranges, with noticeable increases during wetter years.

Approximately 500 pronghorn antelope reside in the planning area and are a common sight on the landscape east of U.S. Highway 97, and occasionally occur in the La Pine area. Except during winter, antelope generally occur in small groups and utilize specific areas made up largely of BLM administered lands. These local herds are found year round in five land areas: Redmond/Mayfield Pond/Alfalfa area; Millican Plateau; West Buttes/South Millican/Skeleton area; Combs Flat/Juniper Canyon area; and north of Ochoco Reservoir.

Antelope are dispersed throughout the planning area but usually occur as distinct herds using general geographic areas. The Redmond/Alfalfa herd ranges from 130 to 150 animals and uses BLM lands southeast of Redmond. There is little use north of State Highway 126 in the Redmond area but occasional movement of animals across the highway occurs.

Directly south of Redmond a herd of 50 to 60 antelope reside year round and occur mainly in the area between Powell Butte highway and the railroad tracks just east of U.S. Highway 97. This herd mixes with an additional 80 to100 antelope that use the area extending south and east of Powell Butte highway into the Mayfield Pond and Alfalfa areas. Disturbances such as old burns, seeded gas pipelines and military use have created increased foraging opportunities here during the past decade. Low road density, limited public access, rough road conditions, large blocks of undeveloped lands, and relatively low human disturbance are probable factors for the successful establishment of this herd.

Another large grouping of antelope occurs in the northern part of the Badlands extending north through the Millican Plateau up to State Highway 126 between Powell Butte and

Prineville. These animals occur generally as two groups totaling about 160 animals. The largest proportion of animals use the Millican Plateau between Reservoir Road and Prineville. Low sagebrush is a component of the Plateau that antelope use year round. Disturbances such as old burns, crested wheatgrass seedings, juniper cutting on private lands, and large powerline corridors have created increased foraging opportunities here during the past decade of antelope expansion. Road densities are higher in this area than surrounding areas, but is currently limited to designated roads and trails associated with the Millican OHV area. Several wildlife guzzlers occur in this area providing water year round. The area east of Millican road is designated as crucial antelope winter range and is used heavily during winter.

West Buttes, South Millican and the Skeleton Fire area support approximately 125 antelope. These animals are dispersed in small groups throughout the spring, summer and fall months, but tend to congregate in a large group in South Millican during winter. Portion of their use areas have been previously designated as crucial antelope winter range in the Brothers/La Pine RMP.

The West Butte/Millican herd often mixes with antelope outside the planning area towards Brothers. The Millican and Skeleton Fire areas are open sagebrush environments that are more typical antelope habitat, and are connected to the Great Basin range where antelope occur more frequently across the landscape. Foraging opportunities are abundant in South Millican and within the Skeleton Fire area. Water is limited in this area where antelope use water from guzzlers, stock troughs, snow pack, and occasional rains.

The Combs Flat/Juniper Canyon area supports a local antelope herd of about 75 to 100 animals. In this area, ownership is a mixture of BLM, State and private lands, but it is mostly private land ranches. In this area antelope occur in scattered groups for most of the year but congregate into agricultural fields during the summer and fall months. Low sagebrush and early seral areas provide the main forging areas for this herd. Crucial winter range designations have been made in the Combs Flat area on both sides of the Paulina Highway.

Only small isolated tracts of BLM lands occur north of Ochoco Reservoir where a herd of 30 to 60 antelope live year round. Pete Creek, mostly in private ownership is the center of activity for this herd. The habitat here is a mixture of pine, juniper and big and low sagebrush. Little is known about the movement and local habits of these antelope. There are occasional sightings of antelope crossing U.S. Highway 26 south into the Comb Flat area, suggesting that there is some mixing of the antelope herds.

Herd migration and intermixing opportunities are limited throughout the planning area due to increased development of private lands and the mixed ownership pattern. Crossing structures such and roads and range fences are all common barriers to antelope movement which can have a negative effect on pronghorn mobility. Increasing human development has resulted in increased density of fences on private lands designed for livestock containment or protection of structures, which forces animals around private lands.

Travel corridors tend to occur in condensed areas between Powell Buttes and the Millican Plateau north of Alfalfa; south of Alfalfa into the Badlands and across U.S. Highway 20 into the Horse Ridge and Skeleton Fire area. The West Butte provides a central pivot point in which antelope can disburse to the Millican Plateau, the Badlands, south Millican and east towards Brothers; and the Combs Flat/Juniper Canyon area to the north of Ochoco Reservoir and U.S. Highway 26.

The Crooked River National Grassland immediately north of the planning area towards Madras is home to 100 to 200 animals. Occasionally these animals have been seen in the Terrebonne area suggesting that these animals could intermix with the Redmond herd.

Big Horn and Mouflon Sheep

California big horn sheep were common throughout Central Oregon in the early 1900s when they apparently disappeared as a result of disease (from domestic sheep) and over-hunting. A healthy population once occurred in the Crooked River Gorge in the vicinity of Crooked River Ranch. Federally, the California big horns are a species of concern, but many populations in the state are thriving well in areas where re-introductions have been made.

Typical habitat for big horns is composed of sagebrush-grassland found in steep rocky mountain ranges, foothills, river valleys, canyon gorges and escarpments. These rugged areas provide escape, lambing, breeding, and foraging habitats and thermal protection. Sheep are dependant on water using any source available. Their home range varies from 7 to 15 square miles. Sheep are active throughout the year and form small dispersed groups during spring and summer and congregate in larger groups during winter. Big horn sheep's diet is primarily made up of grass especially bluebunch wheatgrass and cheatgrass. However, their diet can change seasonally, from grasses and forbs in the spring to woody shrubs in the winter.

Oregon Department of Fish and Wildlife conducted a statewide inventory of current and historic range for big horn sheep and the current habitat conditions. They prioritized suitable areas for re-introduction of big horn sheep. The Crooked River Canyon was determined to have suitable habitat for a population of approximately 75 sheep. This area is currently ranked number one for the next potential release site.

The Crooked River Canyon near Crooked River Ranch is currently occupied by feral sheep descended from mouflon, Barbados and Hawaiian sheep introduced several decades ago. Approximately 100 of these animal roam throughout Crooked River Ranch, and are loved by some residents, but a pest to others. These sheep can carry the disease Pasteurella, which is considered deadly if contracted in native big horn sheep. Land ownership is mainly BLM administered lands mixed with private land and Crooked River National Grasslands. The feral sheep are using the Crooked River Ranch area and stay mainly in the canyon on BLM lands but will frequently use water and feed on private lands adjacent to the caynon.

Predators

This group of animals includes those that seek and usually kill other animals for food. Common predators that occur throughout the planning area include coyotes, mountain lions, and badgers. Mountain lion populations have been increasing in the area for several years and interactions with human has become more frequent as urban grow. Cougars occur throughout the area and follow the movements of deer and elk which provide their main source of food. Sightings of mountain lions regularly occur in the area of Horse Ridge, Badlands WSA, Cline Buttes, Grizzly Mountain, and urban areas surrounding Bend, Alfalfa, Prineville and La Pine. Coyotes are abundant throughout the area and occur in every habitat type. Badgers, also common throughout the area, occur in much less density than coyotes but are still common in every habitat type. Badgers feed extensively on ground squirrels, and areas with high ground squirrel densities usually have a high density of badger digs.

Other predators that have potential habitat but are not well documented in the planning area include Canada lynx, Pacific fisher, California wolverine, and American marten. These predators are very secretive animals, some are nocturnal, and they tend to avoid areas of high human presence. As a result, data on populations, habits, and habitat use is sometimes limited.

Canada Lynx

The Canada lynx is currently listed as threatened across the contiguous United States by the USFWS. Lynx likely have never been as abundant in the lower 48 States as in northern

Canada and Alaska because less lynx and snowshoe hare habitat exists in the southern part of their range. Over-trapping when fur prices were high in the 1980s caused drastic declines in lynx numbers. Development and urbanization, forest fire suppression, and unsuitable types of forest management have caused the loss of the lynx's forest habitat (USDI 1998).

Lynx use older, mature forests with downed trees and windfalls to provide habitat for denning sites, escape, and protection from severe weather. During the reproductive period, lynx kittens use down logs as escape habitat. Lynx need forested habitat when they travel, and generally avoid crossing openings greater than 300 feet in width. In Alaska and Canada, the lynx prefers boreal forests, and in the Intermountain West they prefer spruce, sub-alpine fir and lodgepole pine forests. In Washington, Idaho, and Montana, lynx occur above 4,000 feet in elevation; in Wyoming, above 6,500 feet; and in Colorado and Utah, above 8,000 feet (Koehler, and Brittell 1990). Evidence presented by Lewis (1998) also suggests that lynx can and will make use of shrub steppe habitats at the southern extent of their range in Idaho during periods of high jackrabbit populations.

Home range size for lynx varies, but in Washington the home range of 2 females was 24.4 square miles while the home range for 5 males averaged 43.1 square miles (Koehler 1990).

Lynx feed primarily on snowshoe hare, which live in dense thickets of young trees and shrubs and along riparian areas. Other documented food sources for the lynx include small birds, grouse, flying squirrels, red squirrels, deer, mink, beaver and mice. Lynx seem to kill about every other day, and average about 170 adult hares and a few birds and mice each year (Saunders 1963).

Historical records of lynx occurrence within the analysis area include: a specimen collected in 1916 roughly 35 miles west of Bend near Lava Lake; a sighting in 1986 northeast of Suttle Lake; a sighting in 1992 south of Newberry Crater; a sighting in 1995 on the south side of Benchmark Butte southwest of Bend; and a sighting in 1996, 7 to 8 miles southwest of Sisters on the Deschutes National Forest. There is one recorded incidence of lynx on the Ochoco NF, a sighting in 1997 near Mud Spring (USDI 1998). During the 1998 field season the PNW Region of the Forest Service in partnership with the USFWS and private partners conducted a sampling of potential lynx habitat within the Oregon Cascades. Preliminary DNA analysis from hair samples collected indicate species presence at two sites on the Deschutes NF. The southern site is near Big Marsh on the Crescent Ranger District and the northern one is near Swampy Lake on the Bend-Fort Rock Ranger District. Sampling was conducted in 1999 and 2000 in the Mt. Hood, Paulina, Maury and Ochoco Mountains. More than 160 sampling stations were set for the surveys resulting in no detections.

There is no suitable lynx habitat and currently there are no connectivity corridors identified on BLM administered lands in the planning area.

Pacific Fisher

The fisher (Bureau Sensitive) is a medium sized carnivore which is found in forest lands across North America. Fisher populations are extremely low in Oregon (Aubry and Houston 1992). Typical habitat is mixed coniferous forest, and lodgepole pine forests. They prefer mature forest or late-seral forest conditions, and often occur near or along riparian areas. High canopy closure is an important characteristic of the their preferred habitat.

Fishers are general predators, and will eat a variety of small to medium-sized mammals and birds. They also will readily eat carrion, fruits and mushrooms. The actual composition of the diet in fishers vary by region depending on the most abundance prey in an area. Young fishers tend to eat more fruits than adults. Snowshoe hares are a major prey item almost everywhere that fishers have been studied. Female fishers raise their young in protected den sites, usually in hollowed out tree or logs.

Ideal habitat does not occur in La Pine although potential habitat does exist. Much of the La Pine area has been set back to an early successional stage due to timber harvest and fuels reduction projects. These habitat conditions are not considered ideal for fisher and the preferred prey of fisher is not abundant in the La Pine area. The best potential habitat occurs along the Little Deschutes River.

California Wolverine

The wolverine is listed by the state as threatened by ODFW. The wolverine has been characterized as being North America's rarest and least known large carnivore. Only limited information exist on their natural history and their current population status of wolverine in Oregon is unknown.

Typical habitat includes boreal forests, but they are known to occupy a variety of habitats including sagebrush scrublands. Wolverine researchers agree, in general, that "habitat is probably best defined in terms of adequate year-round food supplies in large, sparsely inhabited wilderness areas, rather than in terms of particular types of topography or plant associations" (Kelsall 1981).

Wolverine are scavengers that are largely dependent on large mammal carrion, and usually don't kill for their own food. They depend on other predators to provide their food sources. Wolverines can move long distances and occupy large home ranges. Human presence is a deterrent to wolverine since they tend to occupy remote wilderness and other large tracts of undeveloped lands.

Populations of wolverine are not known in Oregon but they are thought to be rare throughout the state. Surveys have not been conducted on BLM lands in the planning area. Observations of wolverines have been made just of the northern planning area on private lands.

The Cascades provide more typical habitat in Oregon, but the La Pine area has the potential to support wolverine. In the La Pine area, designated deer migration corridors provide connective habitat that allows the opportunity for wolverine to travel between more suitable habitats of the Cascades and the Newberry Crater area.

Amphibians

Amphibians represent an important biotic component of riparian ecosystems. This group of animals includes frogs, toads and salamanders. They comprise important components of the riparian food chain of detritivores, herbivores, insectivores and carnivores. In some areas the largest proportion of total vertebrate biomass is made up of amphibians. Amphibians are aquatic dependant species (usually for breeding), using almost all types of water sources with adjacent vegetation. Some frogs and toads spend their winter under insulated layer of leaves or woody debris while others bury themselves in bottom of muddy lakes or ponds.

Amphibians are considered long-lived animals (life-spans up to 20 years), although most are eaten as prey withing five years. Most amphibians don't breed until at least their second year of life, when they seek water sources that are warm, shallow and have vegetation to support the success of egg development. Eggs are laid in clutches or singly, depending upon the species, and usually on vegetation. Eggs hatch into aquatic larval stage and metamorphose into a terrestrial form (Leonard et al., 1993).

Amphibians have limited mobility and dispersal capabilities, so continuous riparian zones are important pathways to colonize suitable, yet unoccupied habitats. Most amphibians require an aquatic habitat for part of their life cycle. The exceptions to this rule are the fully terrestrial salamanders of the Plethodontidae family. Land uses that decrease down log abundance will decrease numbers of amphibians that use down wood for all or part of their life cycles.

Although Central Oregon has a generally low diversity of amphibians species, there are several important species found throughout the planning area. They tend to occur in areas with water in the form of wet meadows, ponds, intermittent streams, artificial canals, and Deschutes River.

The Oregon spotted frog is a federal candidate species officially designated by the USFWS. Historically, spotted frogs were found at elevations from around 600 to 5,000 feet, and ranged from British Columbia through the Puget trough of western Washington and south through western Oregon. It was also found in the Columbia River Gorge, the Klamath Basin in Oregon and California and the Deschutes River Basin (Mcallister and Leaonard 1997). The latter three population centers are now all that is known to remain east of the Cascade crest, and only one population is known to remain west of the Cascade Mountains. Recent surveys indicate a disappearance level of at least 70 percent across its former range (Hayes).

Spotted frogs are most often associated with wetland plant communities dominated by sedges, rushes, and grasses in or near permanent water (Leonard et al., 1993), however, McCallister and Leonard (1997) reported that they are sometimes found in riparian forests. Spotted frogs prefer relatively warm water and are sometimes found in beaver created habitat. These productive emergent wetlands provide a diverse community of invertebrates on which spotted frogs feed. They consume plant tissue, bacteria, algae, detritus, and carrion (McCallister and Leonard 1997). Spotted frogs breed in very shallow water beside ponds or streams, in flooded meadows, or in water pooled on top of flattened, dead vegetation at the edge of a pond, usually in early to mid-spring depending on the temperature.

The Deschutes National Forest along with Prineville BLM have recently mapped current and historic range of Spotted frogs in Central Oregon. The La Pine block of the planning area is within historic and current range for spotted frogs. Much of the occupied habitat in the planning area occurs in the Little Deschutes River and Crescent Creek.

The Cascade frog (Bureau Tracking) is found in the planning area, but only in rare occurrences, such as in the Little Deschutes River and Squaw Creek. Cascade frogs are more common in the higher elevations of the Cascade lakes and meadows. The typical habitat is large wet meadows that remains damp during the summer months, where large numbers of Cascade frogs occur in the proper habitat. The planning area contains only a few areas with suitable habitat for cascades frogs and is limited in the quantity necessary to support large populations.

Tailed Frogs (Bureau Tracking) are stream dwellers that do not inhabit ponds or lakes. In Oregon, this frog is found mainly west of the Cascade mountains but there is the possibility of overlapping populations into the east slope of the Cascades. Tailed frogs have not been documented within the planning area but potential habitat exist in the Squaw Creek and the Little Deschutes River.

The current range of the Northern leopard frog (Bureau Sensitive) is normally found along the Columbia and Snake rivers, but its historic distribution in the Deschutes river system is unknown. This frog occurs in and around wet meadows, potholes, and riparian zones where there is abundant vegetative cover (Leonard et al., 1993). Surveys conducted in the planning area have not found leopard frogs and they are not suspected to occur in this area. The higher elevations and cooler temperatures of Central Oregon may not be suitable for the leopard frog.

Other amphibian species that can be found in the planning area include the spadefoot toad (in the desert areas east of Bend, the western toad (Bureau Tracking) found throughout the planning area, Pacific Treefrog, and the long-toed salamander. The introduced bullfrog also occurs in the planning area, and is common in irrigation ponds, canals, stock ponds and warm water rivers. Western toad populations are declining throughout their range, but this

species has not yet been listed as sensitive. Future management may need to consider western toads.

Major threats to the amphibians in the planning area include conversion of wetland vegetation, changing hydrologic conditions, poor water quality, pesticides, herbicides, fertilizers, and introduction of non-native species (i.e. bullfrog). The increased conversion of natural vegetation on private lands to agricultural crops has increased the introduction of pesticides, herbicides and fertilizers into the environment. Many canals occur on BLM managed lands but the extent by which the chemicals may effect amphibians has not been investigated within the planning area. Livestock grazing occurs near streams and ponds in the planning area and has the potential to reduce vegetation important to amphibians.

Reptiles

Reptiles are a group of animals better known as lizards, snakes and turtles. Lizards and snakes occur throughout the planning area but are limited to few species. Turtles are not found in the planning area and there are no documented observations on BLM lands.

Many species of reptiles use riparian zones for foraging because of the high density of prey species, including insects, invertebrates, fish, amphibians, small mammals, and young birds. Snakes and boas are common users of the moist areas in which several occur in the planning area, including the rubber boa, racer, ringneck snake, striped whipsnake, gopher snake, western garter snake, common garter snake, and western rattlesnake. No surveys have been conducted for snakes in the planning area and only occasional sightings have been documented.

Common lizard species in the planning area include the northern sagebrush, western fence, short-horned, side-blotched, and the western skink. Less common but may occur in the planning area are the northern alligator lizard, southern alligator lizard, and the introduced plateau striped whiptail lizard (confined to the area around Cove Palisades State Park).

Typical habitat for the northern sagebrush lizard (Bureau Tracking) includes sagebrush dominated vegetation zones but can be found in open forests of juniper, ponderosa pine and lodgepole pine that has an open brushy understory (Nussbaum et al., 1983). These lizards are normally ground dwellers and use rocks and crevices to escape predators. They rarely climb vegetation more than a few inches off the ground. Sagebrush lizards eat beetles, flies, butterflies, caterpillars, ants, and a wide variety of other insects (Nussbaum et al., 1983).

The sagebrush lizard is found throughout the planning area but is thought to occur in higher abundance on the eastern edge of the area where sagebrush is a more dominate vegetation type (Demmer, personal communication). No surveys have been conducted on the sagebrush lizard or its habitats in the planning area.

Fish

The Deschutes River, Crooked River, Little Deschutes River, Crescent Creek, Squaw Creek, Reynolds Pond, and Mayfield Pond are water bodies on or partially on BLM managed lands that support fish. Currently there are no known BLM actions that are significantly affecting the fisheries resource within the planning area. Listed below are the habitat conditions, fish and population status, and management effects for those waters.

Crooked River (BLM Managed lands Below Bowman Dam to Lake Billy Chinook)

The Bowman Dam to Prineville section supports a mix of native redband trout, hatchery rainbow trout, and mountain whitefish. This section also supports small numbers of small-

mouth and largemouth bass, brown bullhead, and very low densities of nongame fish. Both sections of the Crooked River support several species of indigenous nongame fish including longnose and speckled dace, sculpin, northern pike minnow, chiselmouth, and bridgelip and large scale sucker. Redband trout and mountain whitefish are present on very low densities in the upstream section and abundant in the downstream section.

Fisheries habitat conditions from Bowman Dam to Prineville are mixed due to several factors. The nutrients and cold water sustain a good tailrace fishery, but nitrogen supersaturation caused when water is spilled over the dam, a reversal of the flow regime from its natural condition, and high turbidity levels limit fisheries production.

Fisheries habitat conditions upstream from the U.S. Highway 97 bridge to Prineville is a mixture of boulder strewn riffles and long glides with a low gradient (0.2 to 1.0%). At river mile 28 the North Unit Irrigation District withdraws the "natural flow" an average of 70 cfs for irrigation in the Culver-Madras area. A minimum of 10 cfs is left in the river. Water quality conditions for the section of the river were reported to be moderate to severe for fish and aquatic life (ODEQ 1988).

In the lower river section below U.S. Highway 97, the remote canyon and relatively undisturbed character have resulted in a near pristine cold water fisheries environment. At U.S. Highway 97 (river mile 18), springs begin to augment flows and contribute significantly to constant water flow, cooler water temperatures, and water quality.

Deschutes River Aubrey Falls to Lake Billy Chinook

Wild fish species currently present in this section of the Deschutes River are redband trout, mountain whitefish, chiselmouth and large scale suckers found upstream to Big Falls and Steelhead Falls, respectively, and bull trout (Steelhead Falls to Lake Billy Chinook). Introduced species include brown trout, tui chub, brown bullhead, three-spine stickleback and smallmouth bass(Lake Billy Chinook to Steelhead Falls).

Fisheries Habitat Conditions in this section of the Deschutes River consists of a narrow canyon with many gradient drops that are barriers to fish migration. The upper end of this section experiences much lower than natural flows due to irrigation withdrawal. The lower end is supplemented by Squaw Creek and spring water that significantly increases flow and water temperature. Due to the gradient of the stream and stream flow spawning habitat is limited for a major portion of this section.

Squaw Creek

Wild fish species currently present in Squaw Creek are redband trout, mountain whitefish, long-nose dace, bridgelip and largescale sucker, sculpin, brown and brook trout (introduced), kokanee, and bull trout (lower end). There is potential for sockeye, summer steelhead, and spring chinook if fish passage plans are successful at the Pelton/Round Butte hydroelectric project.

BLM managed lands along Squaw Creek are in 5 parcels which include 1.2 miles of the creek. Fisheries habitat on the BLM managed lands above Alder Springs are generally fair to poor due to low water flows and high water temperatures. BLM managed lands below Alder Springs are generally good to excellent due to the influence of the numerous springs that supplement the stream flow with cold water.

Little Deschutes River and Crescent Creek

Fish species in the Little Deschutes River and Crescent Creek are redband trout, brown and brook trout (introduced), mountain whitefish, and sculpin. Reasons for the current low numbers of redband and brown trout are unknown at this time, but may be attributed to the

high infestations of nematodes found in these fish. On BLM managed lands along these creeks, fisheries habitat conditions are in good to excellent condition with adequate instream cover, healthy riparian areas, and moderate water temperatures to support cold water fish.

Reynolds Pond

Reynolds Pond is one of two ponds in eastern Oregon where redear sunfish have been introduced. Other fish species known or suspected to occur are largemouth bass, brown bullhead, and three spine stickleback. Lack of productivity in Reynolds Pond has created a population of stunted redear sunfish that out compete the largemouth bass. Habitat conditions are poor north of the pond's small islands due to shallow water and lack of cover. This concentrates fish in the southern portion of the pond near the dike making them vulnerable to fishing pressure. The pond was fertilized in the early to mid 1990s by ODFW to increase productivity. No studies to date have been done to determine the effectiveness of this measure.

Mayfield Pond

The only fish species known to occur in Mayfield Pond is brown bullhead. It appears that the population is large but the fish are small. Due to the shallowness of the pond, poor fisheries water quality, the potential is quite low to support most fish species.

Endangered Species and Essential Fish Habitat

Currently there is only one fish on the Endangered Species list and that is bull trout listed as threatened. Within the planning area these fish are located in the Deschutes River downstream of Steelhead Falls and Squaw Creek downstream of Alder Springs.

Special Management Areas

Wilderness Study Areas

The Statewide Oregon Wilderness EIS was completed in December, 1989, and was followed by the record of decision in October, 1991 titled "Wilderness Study Report." Two Wilderness Study Areas (Badlands WSA and Steelhead Falls WSA) were evaluated, with nearly the entire Badlands WSA being recommended suitable for wilderness designation. Steelhead Falls WSA was not recommended suitable for wilderness designation. Horse Ridge ACEC/RNA (see ACEC section, below) is also known as the Western Juniper Instant Study Area (ISA) which was evaluated for wilderness designation in Volume II of the Wilderness Study Report. This ISA was determined to not have wilderness characteristics and was not recommended suitable for designation. However, all three areas are managed under BLM's Interim Guidelines for Lands Under Wilderness Review (BLM, 1995), better known as the Interim Management Policy (IMP), until Congress acts on Oregon BLM's wilderness recommendations. Only Congress can designate Wilderness or release areas from further wilderness review. The total acreage and amount recommended suitable and unsuitable for designation for each WSA or ISA is shown in Table 3D. Steelhead Falls WSA, Badlands WSA, and Horse Ridge ACEC/RNA/ISA are shown on Map 9-Special Management Areas.

Motor vehicle access is extremely limited in the Steelhead Falls WSA, due to steep topography of the Deschutes River Canyon and surrounding private lands which block most access. Folley Waters Road and BLM managed lands adjacent to the WSA were closed to vehicle use through an EA in 1997. Several other locations adjacent to the WSA receive occasional unauthorized vehicle use, including off Canary Drive, River Place and Scout Camp Trail.

Table 3D. Wilderness Study Area (WSA) Acreage

Wilderness Study Area	Acreage Recommended Suitable	Acreage Not Recommended	Total Acreage
Badlands WSA	32,030	191	32,221
Steelhead Falls WSA	0	3,240	3,240
Western Juniper ISA	0	600	600

Source: Wilderness Study Report, Volumes 1 and 2, 1991 (BLM-OR-EA-91-43-8561.6)

As the adjacent community of Crooked River Ranch grows, the use on trails within the WSA has increased. Numerous, braided, user created trails exist in the WSA. None of these trails are maintained, which has resulted in erosion and some public safety issues.

The Western Juniper ISA is managed as the Horse Ridge ACEC/RNA under a management plan implemented in 1996 (see ACECs, below). Management of this area as an ACEC/RNA protects wilderness values since access is limited to foot traffic and any activities which would modify or impact the vegetation communities are prohibited. There is concern as mountain bike use increases in the general area and intrusions into the ISA by trail users have been noted. Field monitoring of this ISA occurs three to four times annually, for both ISA and ACEC purposes.

Wild and Scenic Rivers

Four segments of National Wild and Scenic Rivers include BLM managed lands within the planning area. Management policy for BLM managed lands within these corridors are covered under various Wild and Scenic River Management Plans adopted during the mid-1990s. The BLM managed lands within the Wild and Scenic River corridors are not being assessed in the Upper Deschutes RMP Amendment.

The Wild and Scenic Rivers which include BLM managed lands include the Lower Crooked (Chimney Rock Segment) Wild and Scenic River, the Lower Crooked Wild and Scenic River, the Middle Deschutes Wild and Scenic River, and the Upper Deschutes Wild and Scenic River (See 9-Special Management Areas). The acreage of these Wild and Scenic River corridors is described in Table 3E.

The Upper River features primarily flatwater boating with limited whitewater and excellent trout fishing opportunities. The Upper Deschutes Wild and Scenic stretch is 54.4 miles, with11 miles classified as “Scenic”, and 43.4 miles classified as “Recreation”.

The Middle Deschutes Wild and Scenic River is a 20 mile stretch of the river from Odin Falls downstream to the upper end of Lake Billy Chinook. This stretch of river goes through several isolated BLM parcels at the upstream (southern) end of the corridor, then through the Steamboat Rock parcel of BLM managed lands west of Terrebonne, and through BLM and Crooked River National Grasslands public lands along the western edge of the Crooked River Ranch community.

Table 3E. Wild and Scenic River Acreage by Ownership

Wild and Scenic River	County	DNF	BLM	CRNG	BOR	State	Private
Lower Crooked (Chimney Rock Segment) Wild and Scenic River	Crook	0	2,300	0	220		40
Middle Deschutes and Lower Crooked Wild and Scenic Rivers	Deschutes and Jefferson	0	3,645	2,535	0	210	2,915
Upper Deschutes Wild and Scenic River	Deschutes	11,462	79	0	0	1,474[1]	3,969

[1]Includes 1,144 acres of land leased by the BLM to the State of Oregon for the La Pine State Recreation Area.

SOURCE: Upper Deschutes Wild and Scenic River and State Scenic Waterway Comprehensive Plan, July 1996; Middle Deschutes/Lower Crooked River Wild and Scenic Rivers Management Plan, December 1992 (BLM-OR-PT-93-11-1792); Lower Crooked River Chimney Rock Segment Management Plan and Environmental Assessment, July 1992 (BLM-OR-PT-92-27-1792).

There are several access points along this stretch of river however, most access is blocked by private development. The greatest concentration of access points to the river corridor occur from local roads within Crooked River Ranch, although the dense, convoluted road network at the Ranch makes it difficult for visitors to find these access points. None of these access points except for Steelhead Falls Campground are signed or developed. Recreational uses identified in the W&S River plan (BLM, December, 1992, BLM-OR-PT-93-11-1792) include fishing, hiking, backpacking, camping, wildlife and nature observation, expert kayaking and rafting, picnicking, swimming, hunting, and photography. Based on regional and national significance, recreation opportunities available within the river corridor were identified as being outstandingly remarkable.

The Lower Crooked Wild and Scenic River corridor is located on the east side of Crooked River Ranch, and is a 9.8 mile stretch of the river. The same outstandingly remarkable recreation opportunities are identified for this Wild and Scenic River stretch as the Middle Deschutes Wild and Scenic River. Access is almost impossible to this stretch of river, which is bordered mostly by private land and confined by steep canyon walls. Several hazardous trails do provide access to the river, and are generally used only by anglers. The one safe access trail (Hollywood Road) has been closed for several years after a private landowner installed a locked gate at their property line.

The Lower Crooked (Chimney Rock Segment) Wild and Scenic River is a 8-mile river segment located between Bowman Dam (Prineville Reservoir) and the city of Prineville. Unlike the other two Wild and Scenic River segments in the planning area, the Chimney Rock Segment has a road alongside the river for the entire 8-mile stretch. Thus, this river segment has numerous access points, including 10 campgrounds and 2 day use sites. Outstandingly remarkable values identified for this river segment are similar to those identified for the Middle Deschutes and Lower Crooked Wild and Scenic Rivers, although the Chimney Rock segment also lists vehicle touring. The river corridor is popular for fly-fishing, sightseeing, camping, and to a lesser extent, kayaking. Lower Crooked (Chimney Rock Segment) recent improvements to Reservoir Road and planned paving of Millican Road may lead to increased visitation to the Wild and Scenic River from the Bend area. These road improvements may increase the use of this river corridor for auto touring and bicycling.

Areas of Critical Environmental Concern

Area of Critical Environmental Concern, or ACEC, is a special designation created by Congress in the 1976 Federal Land Policy and Management Act (FLPMA). Under FLPMA, the Secretary of the Interior and the BLM were directed to designate as ACECs: ". . . areas within the public lands where special management attention is required . . .to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards." There are six ACECs within the planning area (6.5% of BLM managed lands), all of which were designated upon publication of the Brothers/La Pine RMP/ROD in 1989. Table 3F lists these areas, their acreage, and the reasons for their designation. Existing ACECs are also shown on Map 9-Special Management Areas.

Badlands ACEC includes 16,860 acres in the heart of the Badlands Wilderness Study Area (WSA), just east of Bend. The area was designated for its primitive recreation opportunities, geologic formations, a prehistoric canyon and pictographs and mature juniper woodland. The area was dual-designated within the WSA to provide long-term management of the WSA core in the event the WSA designation was lifted without wilderness designation.

Management direction for the ACEC is consistent with WSA management and prohibits firewood harvest, vehicle use off designated routes, new rights-of-way authorizations and vegetation manipulation (See Map 10). Other uses and management must be consistent with the values for which the area was designated.

Present concerns mainly relate to vehicle use off designated routes and unauthorized motorized vehicle use during seasonal route closure periods (December 1 to April 30). Management actions have included signing, blocking of vehicle routes and increased law enforcement surveillance.

Table 3F. Existing Areas of Critical Environmental Concern (ACEC) Within the Planning Area

ACEC Name	Acres	Special Value
Badlands	16,860	Primitive recreation, juniper woodlands, geology, and pictographs
Horse Ridge	600	Cell #3 - western juniper/big sagebrush/threadleaf sedge community[1]
Lower Crooked River	2,830	Recreation, scenery, and fisheries
Peck's Milkvetch	3,902	Special status plant (Peck's milkvetch) and critical deer winter range
Powell Butte	520	Three RNA terrestrial ecosystem cells: Cell #4 - western juniper/big sagebrush/bluebunch wheatgrass; Cell #5- western juniper/big sagebrush/Idaho fescue; and Cell #8 - western juniper/bluebunch wheatgrass[1]
Wagon Road	160	Remaining segments of historical Huntington Road
Total BLM Acres	**24,872**	

[1]High Lava Plains Province as published in the Oregon Natural Heritage Plan (NHAC, 1998)

Horse Ridge ACEC has the additional designation of a Research Natural Area (RNA), which occurred in 1967. The National Park Service designated this 600-acre area as a National Natural Landmark (NNL) in 1968. Its 600 acres, on the predominately northeast slope of Horse Ridge, represent cell #3 for the High Lava Plains Province as published in the Oregon Natural Heritage Plan (NHAC, 1998): western juniper/big sagebrush/threadleaf sedge community.

A management plan for the ACEC was completed in 1996. Specific, ongoing management actions include continuing plant inventory (native and exotic) and monitoring (fence maintenance, use in and adjacent to ACEC). Although the area is fenced, the recent development of unauthorized mountain bike trails attests to the increased public recreational use in the planning area. Such disturbance is likely to impact the ACEC through the introduction of noxious weeds and other non-native species.

Horse Ridge ACEC/RNA is also known as the Western Juniper Instant Study Area (ISA), as discussed in the Wilderness Study Area section, above. The restrictive management imposed by the management plan for this ACEC exceeds that required by the Interim Management Policy for Wilderness Study Areas.

Lower Crooked River ACEC encompasses 2,830 acres of canyon land immediately downstream from Bowman Dam, the structure creating Prineville Reservoir. The primary values were associated with its designation as a National Wild and Scenic River by the Omnibus Oregon Wild and Scenic Rivers act of 1988. The RMP specified that the area would be protected by restricting OHV use, not allowing firewood cutting, encouraging prescribed fire and by making sure any other authorized activities are compatible with the values of the ACEC.

Since publication of the Brothers/La Pine RMP/ROD, a formal management plan for the Lower Crooked Wild and Scenic River (Chimney Rock Segment) was prepared in 1992. This plan encompasses the majority of the ACEC and has, in most respects, been implemented with protective measures equal to or, in most cases, more stringent than stipulated for the ACEC.

Most impacts associated with visitor use and recreation are being managed and facilities (including campsites and trails) have been developed. There is still concern related to the effect that an increasing western juniper density is having on the plant community within this ACEC.

Peck's Milkvetch ACEC encompasses 3,902 acres in an area southwest of Cline Buttes, in the Cline Buttes Issue Area. The area was designated for its value as critical deer winter range and as habitat for Peck's milkvetch (*Astragalus peckii*) a Bureau Sensitive species also listed as Threatened by the State of Oregon. At the time, the ACEC encompassed the entire known range of this plant within the planning area.

Management direction for the ACEC, as provided for in the RMP, has been to restrict or bring into conformance all uses so they are compatible with Peck's milkvetch and critical deer winter range. Land tenure adjustments and firewood cutting are prohibited outright. Long-term monitoring of Peck's milkvetch has been established.

Increased recreation, including OHV, horseback riding, mountain biking and hiking, is occurring within the ACEC, some of which is not compatible with the management direction. There is no active livestock grazing use within the ACEC. Several small tracts of private land lie within (but are not part of) the ACEC boundary, many of which contain residences. In addition, significant populations of Peck's milkvetch have now been found outside the ACEC and the opportunity exists to enlarge the area.

Powell Butte ACEC also has the additional designation as a RNA. Its 520 acres on the south slope of Powell Butte represents three RNA terrestrial ecosystem cells for the High Lava Plains Province as published in the Oregon Natural Heritage Plan (NHAC, 1998): #4, western juniper/big sagebrush/bluebunch wheatgrass; #5, western juniper/big sagebrush/ Idaho fescue; and #8, western juniper/bluebunch wheatgrass.

Management direction for this ACEC has been to essentially exclude all uses other than casual recreation and research. A management plan for this area needs to be prepared and long-term monitoring initiated. Although livestock use is not presently occurring to any great degree, the ACEC/RNA needs to be fenced around its perimeter to make the area secure for research purposes. Subdivision development of adjacent private land may increase the amount of unmanaged public use in the ACEC, resulting in the formation of pedestrian, equestrian and motorized trails. These trails would likely fragment the existing plant communities and serve as pathways for the establishment of invasive plants. Additional effects of adjacent development could include an increase in feral animals, illegal dumping and vandalism of natural resources.

The Wagon Road ACEC encompasses three small parcels of land totaling 160 acres. Each contains remaining segments of the historic Huntington Road, a major supply route linking The Klamath Agency with The Dalles. A public interpretive trail has been developed on the largest, southernmost segment, in cooperation with the Deschutes Co. Historical Society and the Oregon Trail Coordinating Council. Other uses of the area, including recreation and livestock grazing, are allowed provided the wagon traces and associated vegetation is not disturbed. The southernmost segment was fenced in an effort to protect the area from OHV use. OHV use is still a concern for the two segments in the north. The southernmost segment was fenced in an effort to protect the area from OHV use.

Caves

Several caves on BLM managed lands in the planning area receive regular visitation from the public. These caves are lava tube formations, some of which are located east of Bend, adjacent to the Arnold lava tube system in the Deschutes National Forest. Others are isolated lava tube formations or rockshelters scattered throughout the planning area. Many of these caves have been nominated by the public for listing as Significant Caves, under the provisions of the Federal Cave Resources Protection Act (FCRPA) of 1988.

Of the caves nominated for listing, the two that receive the most visitation are Redmond Caves and Stout Cave, both located in Deschutes County. Both caves are expected to receive increased visitation as the population of Central Oregon grows. This increased visitation from a variety of recreationists has heightened concerns over cave resources. The development of sport climbing routes in Central Oregon caves beginning in the early 1990s also likely led to increased visitation. Since the early 1990s, a number of climbing routes in different locations have been developed in Stout Cave, protected by the placement of approximately 88 bolted anchors. Motor vehicle access to the Stout Cave entrances was closed by the BLM in 1990. Concerns over impacts to cultural resources and to bat populations led to a closure to all uses at Stout Cave in 1998. Early monitoring by volunteers, BLM, and Deschutes National Forest staff indicated that some violations of the closure were occurring. Monitoring efforts have decreased in recent years, although Stout cave is still monitored by the Archaeological Society of Central Oregon (ASCO). This closure remains in effect until the Brothers-La Pine Amendment is implemented.

Redmond Cave has also experienced increased visitation, mostly as a result of its location adjacent to the City of Redmond. Redmond Cave has suffered from many abuses over the past decade, including heavy amounts of graffiti, campfires inside the cave, excavation, human waste, abandoned automobiles, and litter. The cave is often visited by local residents who wish to explore the branched lava tube system however, the cave is also a popular place

for parties and the area is often used by the homeless who are living on BLM managed lands near the city.

Since 1998, the City of Redmond has been working to lease the Redmond Cave site from the BLM under the auspices of the Recreation and Public Purposes Act (R&PP). The R&PP Act provides the opportunity to meet local needs through the lease or sale of BLM managed land. The City of Redmond envisions the site as a public park. An environmental assessment (EA) for the R&PP Act lease and subsequent development of the site has not been completed yet. The cave site is also of possible interest as a future administrative site for the combined Deschutes and Ochoco National Forests.

Archaeological Resources

Cultural resource surveys have been conducted over approximately 22% of the total Upper Deschutes planning area. Those surveys have resulted in the documentation of hundreds of prehistoric and historic sites that represent a broad spectrum of past human activity within the area. Documented sites include, but are not limited to: lithic scatters; rock features; temporary prehistoric camp sites; rock art; remnants of homestead cabins; segments of historic trails; roads and canals; and landscape settings linked to ranch houses, corrals, barns and animal husbandry. Despite what is known about the number of documented sites, few of those recorded sites have been evaluated for their significance or their eligibility to the National Register. Evidence indicates that numerous other sites remain within the planning area that have yet to be discovered and recorded.

Prehistoric and Historic Human Uses

First Nations of the Region and Prehistoric Resources

During the first half of the 19th century, when Euroamericans began exploring central Oregon in pursuit of fur bearing animals and political objectives (Robbins 1997:40; Clark 1981:16-17; Oetting 1997:8), they occasionally encountered small groups of Indian people involved in seasonal activities throughout what is now the BLM Deschutes Resource Area. According to observations by those outside travelers, the native people they contacted spoke numerous languages or dialects and were members of various tribal groups. A partial listing of those tribal groups included the following: Snake; Hunupui Eaters; Shoshone, Paiute; Northern Paiute; Juniper-Deer-Eaters; Warm Springs; Tygh; Molalas; Shahala; Wasco; Upper Chinook; Tenino; Celilo; Wyam; Wanapum; Sahaptin; and Klamath (LeBow 1990:19). In an attempt to alleviate some of this historical confusion, ethnographers and linguists doing studies in the late 19th and early 20th centuries, as well as reorganization during the establishment of reservations, concluded that native people living in the central Oregon region at the time of white contact consisted of three primary tribal groups: the Wasco and Warm Springs; Northern Paiute; and the Klamath.

During historic times, the Wasco and Warm Springs people occupied portions of the lower Columbia River and segments of the Deschutes and John Day Rivers (Confederated Tribes of Warm Springs 1992:2). The Northern Paiute were based in the Harney Valley but utilized resources along the upper Deschutes and John Day Rivers as well as throughout the High Desert (Burns Paiute Tribe 1992:personal communication). In contrast to that, the Klamath lived beside the lakes and marshes of the Klamath basin in southcentral Oregon, but utilized resources on a seasonal basis along the upper Deschutes River and in the adjacent High Desert area (Zucker et al., 1983:11). Conflicts between those groups over lands and resources did occur periodically (Oetting 1997:8) leaving the question about which group may have held the territory on a consistent basis largely unknown. Yet despite those ambiguities, at least three assumptions about pre-contact land tenure can be made from both the archaeo-

logical and ethnographic evidence: changes in environmental conditions warranted modifying land use strategies; one group simply out-competed another for resources; or clashes between groups established new tribal territorial boundaries. What the archaeological record does confirm is that, although Indian people established many temporary camps throughout the area during the past 10,000 years (Pettigrew et al., 1998:3.3), there were few if any permanent settlements in the Upper Deschutes Planning Area (Oetting 1997: 5-10). Whether early prehistoric people were culturally affiliated with contemporary Indians living in the region today is not known.

Indigenous Traditional Lifeways and the Cultural Landscape

Precontact Indians living in central Oregon were members of hunting and gathering societies who survived by virtue of a detailed understanding about their surroundings (Hunn 1990:91). Like all groups of hunters and gatherers, through time and across space, they followed broad seasonal rounds across the landscape. With a knowledge about resources that comes only from living close to the land, those annual rounds set a schedule determined by the season and dictated by soils, water, and elevation, to put people in a particular place, at a particular time, when particular resources were available for harvesting (Aikens and Couture 1991:21). By way of example, a very general scenario of resources pursued during the course of a seasonal round for some, but not all, groups of Indian people living in prehistoric central Oregon might be as follows: (April) low elevations-first green shoots appear; (April-May) tuberous and globulous roots from semiarid, rocky soils at moderate elevations; (April-May) river stations for salmon; (late June) upper elevation meadows for bulbous roots; (late June-early July) rivers for blueback, salmon and summer steelhead and possibly to gather various early fruits such as serviceberries, gooseberries, currants, and chokecherries; (late August-September) mountain locations for huckleberries, deer, elk; (September-October) river stations for fall chinook and mountain locations for deer and elk; (November-March) occupation of winter villages (Hunn 1990:119-134). While in winter villages, people often took the opportunity to take waterfowl and procure non-migratory species of fish from local rivers, streams, and lakes and to hunt for various large and small game in the immediate vicinity. Additionally, at some winter village locations in central Oregon, people would participate in communal rabbit or antelope drives on the high desert (Aikens and Couture 1993:16). The forgoing discussion constitutes only a small percentage of resources utilized by central Oregon native people during their seasonal round. Ethnographic and anthropological studies conducted over the past one hundred years inform us that dozens of different plant and animal resources, from scores of different locations, were utilized by precontact Indian people living in central Oregon (Coville 1897; Spier 1930; Couture et al., 1986; Ellis et al., 1998; Hunn et al., 1998). The knowledge of those resources not only provided for the procurement of many different kinds of foods and medicines but also the raw materials to produce tools, utensils and weapons, shelter, clothing and items of personal adornment, power, wealth and prestige. Taken from that perspective, it becomes obvious that, "the totality of the regional landscape has importance" to local populations of Indian people (Hanes 1995:30).

Aboriginal patterns tethered to annual rounds have been greatly disrupted since white settlement and development in central Oregon. With the arrival of Euroamericans, property ownership changed, private property was fenced, soils plowed under or grazed over, irrigation canals, roads and railroads constructed, forests cut, wildland fires suppressed, and rivers dammed and reservoirs impounded. Those activities have had a tremendous affect on the plants, animals, fish, and sacred places upon which native people depended. Despite those changes to the land and displacement of resources, many contemporary Indians continue to practice and follow certain aspects of the traditional lifeway. Throughout central Oregon and beyond, they gather roots, berries, various seeds, and medicinal plants, fish, hunt game, and collect numerous items for ceremonial and spiritual purposes. Although changes to the land have, in some cases, forced contemporary Native people to seek resources significant to their

cultural identity at new locations, still, other locations have been visited continuously for hundreds and even thousands of years. The rights of Federally recognized Indian Tribes to maintain their cultural identity through such traditional activities on BLM managed lands has been guaranteed to them as a result of various treaties, statutes, congressional acts, court cases, and executive orders.

Euroamerican Settlement and Development and Historic Resources

The first Euroamerican encounters with central Oregon came by way of agents of empire and the federal government. Meriwether Lewis and William Clark skirted the northern edge, but never penetrated the hinterlands of central Oregon during 1805 on their trip down the Columbia River to the Pacific Ocean. As its name implies, the objective of the "Corps of Discovery" was to determine if a northwest passage between the Atlantic and Pacific oceans truly existed and to document the lands, people and resources of the newly acquired Louisiana Purchase. Succeeding admirably in their mission, the Corps' accomplishments fueled the curiosity and commercial ambitions of those who followed (Schwantes 1989:47-48).

During the next half century, central Oregon was entered by fur trappers and various explorers in the employ of the Hudson's Bay Company and the federal government. Peter Skene Ogden and his fur trapping brigade penetrated the upper Deschutes and Crooked Rivers during their Snake Country travels to Harney Basin in 1825-1827 (Vaughan 1981:2; Robbins 1997:223). Ogden's excursions into central Oregon were followed in the 1840s and 1850s by the explorations of John C. Fremont, Robert Williamson and Henry Abbot. Members of the Army Corps of Topographical Engineers, their respective missions resulted in the mapping and documentation of hitherto unknown portions of central Oregon lands and resources. It is interesting to note that, in his final report, Abbot concluded that the region was unlikely to develop economically as it was "separated from the rest of the world by almost impassable barriers" and offered "very few inducements to settlers" (Brogan 1964:236).

Despite Abbot's admonition, settlers did come. Most of the early immigrants of the 1840s and 1850s, however, did not stay. Traveling, instead, either past or through central Oregon from the east on their way to the more fertile lands of the Willamette valley. But by the 1860s a network of roads and trails were beginning to form throughout central Oregon as settlers took up lands within valley basins and miners headed to the gold camps in the John Day country. Entering the area from California to the south, miners traveled the Yreka Road to the John Day gold fields while settlers in covered wagons, often pushing herds of cattle, swine or sheep, crossed the Cascade Mountains through Santiam Pass following the Willamette Valley Cascade Mountain Military Wagon Road or over the McKenzie or Scott's Trails. The Dalles to Canyon City to Boise Road also witnessed thousands of immigrants entering central Oregon not only south from the direction of The Dalles but east from Boise as well (Lebow, et al., 1990:74). Still another important north/south arterial, known as the Huntington Road, was developed for transporting goods from Fort Dalles to Fort Klamath after the establishment of the Klamath Indian Reservation in 1864.

Arrival of large numbers of settlers had a tremendous impact on the lifeways of Indian people living in the area. As a result of those impacts, tensions mounted between the two cultures and eventually escalated into the conflict known as the Snake Wars (Lebow et al., 1990:75). With the outbreak of that conflict, in 1859, numerous military garrisons were established along the Willamette Valley Cascade Mountain and The Dalles Military Roads. In central Oregon those garrisons included Camps Polk, Gibbs, Watson, and Maury (Preston 1977:60). Established to protect miners and settlers and keep lines of communication open, troops occupied those posts sporadically until the end of hostilities in 1868.

White settlement spread out to all areas that would seemingly support farming or livestock raising in central Oregon at the close of Indian/White hostilities. Cattle and sheep herding expanded in the 1870s from its humble beginnings from the previous decade, though it would not reach large scale proportions until the end of the century (Lebow et al., 1990:75). Far more important, however, was the development of towns and rural communities during the final quarter of the 19th century and continuing into the first two decades of the 20th century. It was during that period that all of the communities known to exist in the area today were established: Prineville in 1871; Bend in 1886; Madras in 1903; and Redmond in 1905 (McArthur 1982:54, 218, 606, 616; Clark 1981:37). Many other rural post office communities with names such as Haystack, Lamonta, Grizzly, and Millican were also established during that period but have all but disappeared with the passage of time.

After the turn of the 20th century, the growth and economic development of the larger, more established, central Oregon communities were substantially secured due to the occurrence of three primary events: the construction of a network of irrigation canals during the first two decades of the 1900s; completion of the Oregon Trunk Railroad to Bend in 1911; and the construction of two large, Minnesota-based, sawmills in Bend in 1916.

Few opportunities moved people in the past like the promise of water or the arrival of a railroad. And central Oregon, at the beginning of the 20th century, was no exception to that rule. Promoted by railroads, irrigation companies, and local land developers as a "fertile tract of land capable of high cultivation," many people were lured to central Oregon with the hopes of turning 320 acres of government land into a bountiful garden (Allen 1987:34; Clark 1981:56, 112). By 1913, new communities with names like Imperial, Stauffer, Hampton, Brothers, and Fremont appeared all across the area "to serve homesteaders whose cabin lights on winter evenings glittered like fireflies in the sagelands" (Brogan 1964:143). Irrigation did enhance the agricultural potential of central Oregon and continues to do so in the present. But most homesteaders who arrived in the area after the turn of the 20th century were forced to take up marginal lands with little access to naturally occurring water or those which were outside the reach of irrigation systems. Disillusioned by short growing seasons, lack of water, hordes of jack rabbits and dry rocky soil, many of those people simply packed up what belongings they deemed worthy of keeping and drove away from a hopeless cause (Allen 1987:91; Clark 1981:56-63; Coe 1939:228-237). In view of those considerations, it was fortunate for many of those ill-fated homesteaders that two large sawmilling outfits in Bend, Oregon, began operations in 1916. Those new mills, and their associated logging camps, offered many people the prospects of a new beginning at a steady job with a reliable income (Allen 1987:85, 99; Gregory 2001:44).

During the greater part of the 20th century, central Oregon's population growth and economic development hinged upon agricultural and timber industries; industries whose activities were largely dependent on public lands for resource extraction. Although still important to various elements of local economies, those industries had greatly diminished by the close of the 20th century to be replaced by yet another industry tethered to use of the public domain– the recreation industry.

Human Use and Relationships Today

Land Ownership

In the past, central Oregon land patterns contained centralized urban areas where locally produced forest and agricultural products were collected, processed, and distributed. For example, trees were logged and shipped from the forests to the towns where they were processed into lumber. Ranches were large and for the most part self-contained. The larger ranches have been broken-up. Modern transportation and transportation systems provide for fast transition from the agricultural lands to the urban lands and has blurred the rural/urban

distinction. People often hobby farm or use their rural lands to supplement income from their city jobs.

Where once small towns were surrounded by agricultural lands, the perimeters of some towns and cities are surrounded by subdivisions and hobby farms with limited amounts of large scale agriculture taking place between the urban settings and BLM managed lands (see Map 1- Land Ownership Status).

Adjacent or in close proximity to most of the towns and service centers are subdivisions, collections of 2, 5, 10, and 20 acre lots with homes and mini-farms or ranches. The density of dwellings have increased adjacent or in close proximity to all the towns and service centers. One such subdivision is Crooked River Ranch in southern Jefferson County.

Large blocks, about 4,000 acres or larger, of public lands administered by the BLM are located within the planning area, which are often adjacent to larger blocks of public lands also administered by BLM or USDA Forest Service that are outside the planning area though still within the counties.

Crook County comprises about 1,914,240 acres, of which about half is public lands. Deschutes County is about 1,955,200 acres, of which about 80% is public lands. The BLM manages 54% of the public land in Crook County, and 31% of the public land in Deschutes County.

The larger blocks of public lands, either BLM or Forest Service, are within a few miles of all the cities, and, generally, closer for the communities, thus, readily available to the public. Large blocks of public lands are located by road approximately, eight miles north, six miles south, seven miles east, and two miles west of Bend; ten miles north, six miles south, twelve miles east, and twelve miles west of Prineville; seven miles north, one mile south, one mile east, and five miles west of Redmond; and within a mile north, within a mile south, six miles east, and within a mile west of Sisters. All of these larger block are contiguous with other large blocks, with the exception of Cline Buttes and Steamboat Rock, the Tumalo Block, and the McKenzie Block, which are within three miles of another larger block. Smaller blocks of public lands are often closer to these cities and often adjacent to the communities.

Smaller blocks of public lands administered by BLM are scattered throughout the planning area; however, there are concentrations located near Grizzly Mountain north of Prineville, between Prineville and Prineville Reservoir, northwest of Redmond, and around La Pine/ Wickiup Junction. These concentrations of smaller blocks may be part of a larger block of public lands. All public lands around Crooked River Ranch, for example, or the concentrations may be isolated parcels amid private lands, the parcels southeast of Prineville for example. These isolated parcels were often located in agricultural areas, as part of a larger open rangeland, but these pockets are becoming surrounded by subdivisions now, and, as a consequence, they are becoming isolated from availability to the general public.

Transportation and Access

BLM managed lands are currently accessible from a wide variety of State Highways, County Roads, local roads, and directly from subdivisions and private property. The widespread access to BLM managed public lands provides opportunities for dispersed recreation throughout the area.

Historically, communities in and adjacent to the planning area have been connected by a system of roads extending like spokes on a wheel from city to city. Two major Highways ran north and south and east and west respectively (U.S. Highway 97 and U.S. Highway 20).

Uses on these major roads is projected to increase as intrastate, interstate, and international traffic increases. U.S. Highway 97 will become a receiver for goods from the eastern towns in the state. U.S. Highway 97 will also be a receiver for goods from the western rocky mountains on highways like U.S. Highway 20. U.S. Highway 97 will also be a corridor for goods from Canada to Mexico.

BLM managed lands may provide for this increase in traffic by providing for needed increase in size of individual roads and providing land for alternative routes for segments of existing roads where urban encroachment prohibits growth of the existing road.

Because of the myriad of recreational opportunities central Oregon is a destination in and of itself. The present and future transportation system will provide for an increase of uses for visiting or tourists, and incoming workforce.

On the local level, transportation planning changes from access to local ranches and major routes to other towns to arterial and collectors that provide for the smooth transition from the workforce from the subdivisions and ranchettes to the city job market and major commerce links to other distributers or provides for services on the transportation links.

On public lands this leads to a transportation systems that is more intertwined with the private transportation system. By necessity, the transportation system needs to consider the area or regional system to reduce duplications and poor layout on public lands. The BLM, USDA FS, State of Oregon, local Counties, and city transportation systems need to agree on road system and degree of construction and maintenance.

Rights-of-Way

Roads on BLM managed lands in central Oregon are a mix of federal, state, municipal, and private, often with split or shared jurisdictions (see Map 11-Roads Map). Many miles of user created roads on the public land have not been identified in the inventory. These roads are used by BLM personnel for administrative access, ranchers and other permittees, and the general public.

There are approximately 151 miles of administrative road (a road BLM maintains for its purposes) in the planning area. Roads are maintained at various levels, depending on maintenance needs and funding. Maintenance reflects the best fit for the Transportation Management Objectives for planned management activities. In addition, most of the road network on BLM managed lands is a collection of user created roads, some of which pre-date statehood. Many existing roads, especially the longer, well developed, and often-used roads are a collection of routes permitted under several ROW grants or authorities. Some of these roads are secondary extensions or facilities in support of a primary ROW, such as a ditch riders road for a canal ROW or a maintenance road for a power line.

Many roads were developed prior to FLPMA, 1976, under several authorities, for example, Revised Statute (RS) 2477 which provides: “The right of way for the construction of highways over public lands, not reserved for public uses, is hereby granted.” Because these roads were permitted without further review by BLM or its predecessor agencies the General Land Office or the Grazing Service, BLM may not have records about these roads, which are most often identified through state or county records, other historical documentation, or use or maintenance records.

After the passage of FLPMA, many of these roads were converted to FLPMA ROW grants that are on file at the District Office, however, many roads were not. FLPMA repealed many road construction authorities, but those granted remain in force until relinquished by the holder or converted to FLPMA ROWs at the discretion of the holder.

To date, the recently combined Ochoco/Deschutes National Forest is working on a roads analysis project that is including participation by the Deschutes Resource Area, BLM.

There are no interstate freeways in the project area. Oregon Department of Transportation has the following highways in Central Oregon that cross public lands:

- U. S. Highway 97, the main north/south route through the center of the state, designated as an expressway (a state designation that is slightly less than a freeway) within the project area, and currently being considered for width expansion or relocation which may involve public lands;

- U. S. Highway 20, the main east/west route through the center of the state, designated as an expressway within the project area, and currently being considered for width expansion between Bend and Sisters;

- State Route 126, the connector between Sisters, Redmond, and Prineville; considered for expressway status, with selection of pullouts between Redmond and Prineville currently being identified, approximately two miles of the road on BLM managed lands east of Redmond may have to be relocated to provide a safety buffer for the Redmond Airport;

- U. S. Highway 26, from Madras through Prineville, does not cross BLM managed lands except one parcel at Prineville Reservoir, which is not anticipated to change within the duration of this planning process;

- State Route 27, from Prineville to Bowman Dam to U.S. Highway 20 near Millican, is the only remaining State Highway with gravel segments. It was designated for replacement, and is currently under consideration for exchange with the Crook County for its segment of Millican Road; and

- Powell Buttes Highway, is a State Highway from State Highway 126 onto BLM managed lands within Crook County, and a county road for the remainder across BLM managed lands to U. S. Highway 20 just east of Bend.

These highways are located on strips of land owned outright by the State of Oregon, or are located on public lands where use is authorized by BLM through right-of-way grants.

Crook, Deschutes, Jefferson, and Klamath Counties have roads on BLM managed lands throughout the project area. These roads are generally permitted through right-of-way grants as provided by the Federal Lands Policy and Management Act (FLPMA), 1976. However, roads may also be permitted through means of other Acts that where in effect prior to 1976 (primarily through Revised Statute 2477), which remain in force until relinquished by the holder.

Under Oregon Revised Statute 368, county roads are public roads accepted by the County Commissioners as county roads that will be maintained by the county. They are often referred to as public roads. Local access roads are roads dedicated to the public but not accepted by the County Commissioners which the county has no responsibility to maintain. These are often referred to as public ways.

Roads maintained by Crook County Road Department are identified on the County map "County Road Map: Crook County Oregon," county roads granted ROWs under FLPMA are identified in file OR 46940, and some local access roads are identified in file OR 53360, all of which are available at the Prineville District Office or the Crook County Road Department offices. Roads maintained by Deschutes County Road Department are identified in the atlas "Deschutes County Official Road Maps, 1999," county roads granted ROWs under FLPMA are identified in file OR 51362, both of which are available at the Prineville District office or the Crook County Road Department offices.

Local municipalities may also request rights-of-way. For example, with the proposed expansion of the fairgrounds and airport southeast of the city of Redmond, the city may request extensions of streets onto BLM managed lands.

Rights-of-way may be granted to private parties to cross BLM managed lands for the purpose of accessing and providing utilities to isolated, individual parcels. With the projected increase in population it has been assumed that the number of right-of-way requests will proportionally increase. This may not be the case because so many of the isolated parcels already have rights-of-way. Increases may instead be regulated for the most part by multiple users and for multiple uses of the same right-of-way.

The percentage of land occupied by ROWs is about 2.5% of Cline Buttes. Lands occupied by ROWs includes the physical area of the road, communication site, or utility line and such buffers as required by law or needed for safety, or necessary for construction. In general more than just the physical area is encompassed by ROWs.

Withdrawals

Some lands managed by the BLM have been withdrawn within the Upper Deschutes Planning area. Withdrawals have occurred in order to transfer total or partial jurisdiction of Federal land between Federal agencies, and to segregate (close) Federal land to some or all of the public land laws or mineral laws, or to dedicate land for specific public purposes.

The Upper Deschutes planning area has existing withdrawals for military training activities at a site two miles southeast of Redmond and at a site eight miles east of Bend, for two exchanges, and for numerous public water reserves and power development purposes primarily along the Deschutes and Crooked Rivers. Under a withdrawal, the future uses of the lands would be determined by the entity for which the land was withdrawn. That entity (e.g. the Oregon Military Department) has control over the land until they relinquish the use of the lands or BLM determines that the use of the lands requested in the withdrawal were no longer being used for the intent described in the withdrawal.

Leases and Permits

Temporary land use permits or leases may be used to authorize such activities as trespass prior to resolution, access, storage, apiary sites, national guard or military reserve training, engineering feasibility studies, and other miscellaneous short-term activities.

Two to four permits are issued annually for photography and film, although the number of requests is typically greater.

Military training has occurred on 31,000 acres southeast of Redmond since the late 1930s. Three year permits for the military's use of this area have been consecutively issued since the passage of FLPMA in 1976. The BLM and the military are discussing the option of permits for training under a lease. Temporary authorizations differ from withdrawals in that the permitted use is short term, the BLM retains administrative responsibility for the lands, and few or no permanent facilities are permitted**.**

The Recreation and Public Purposes Act

The Recreation and Public Purposes Act (R&PP) authorizes the sale or lease of BLM managed lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations. In the Upper Deschutes planning area, R&PP has been

used for sewage treatment facilities in Bend, Redmond, and La Pine; golf courses; libraries; parks, and shooting ranges. In the future, it is anticipated that R&PP will be used for sewage treatment facility expansions, municipal parks, expansion of state parks, and public buildings such as fire stations or schools.

In 1995, Central Oregon Shooting Sports Association (COSSA) leased approximately 450 acres of BLM managed land for use as a public shooting range. The range is located immediately north of U.S. Highway 20 near the Millican town site. The site is managed as a shooting range by COSSA, with BLM oversight. While the site remains open to the public, and is extremely popular for organized group events; it generally does not draw casual, daily use from surrounding populations, such as Prineville, Redmond, Terrebonne, or Crooked River Ranch.

The Bend Aero Modelers Club was granted an R&PP lease in 1999 for a 5.75 acre site northwest of Dry Canyon and immediately north of U.S. Highway 20. This site is used for operation of gas powered model airplanes.

Prehistoric/Historic Resources

The integrity of prehistoric and historic resources within the planning area is currently threatened by a variety of causes. Some of those causes have occurred gradually as a result of natural weathering and erosion, while other effects are occurring more rapidly due to human activities. Those activities include urban sprawl and authorized commercial activities, recreational uses, military maneuvers, livestock grazing, and target shooting. In addition to those adverse effects, illegal artifact collecting and vandalism is also an ongoing concern. Violations have occurred within and around the planning area and a number of convictions have been made. Yet despite those convictions, present law enforcement efforts aimed at stopping the vandalism of prehistoric/historic sites and materials have been insufficient. It is expected that the rate at which those violations have occurred will only intensify as the human population in the area grows and increasing numbers of individuals make use of BLM managed lands. Additionally, efforts toward public awareness and education about resource significance and about laws pertaining to resource protection have likewise proven insufficient without adequate coordination, collaboration between managing agencies.

Cultural Resources (National Register Sites /Historic Properties)

National Register Sites, or historic properties, are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource" [16 U. S. C. 470w(5)]. Eligibility for inclusion to the National Register is determined by criteria established by the National Historic Preservation Act of 1966 as amended. Historic properties that are included on or eligible for inclusion in to the National record are those that are considered unique, provide information important to the study of history or prehistory, and/or are associated with important events or persons that have made contributions to the broad patterns of our history.

Currently, none of the cultural resource sites identified and evaluated within the Upper Deschutes planning area are listed on or considered eligible for inclusion into to the National Register. However, many of those sites have not been fully evaluated to determine their eligibility potential. Furthermore, evidence indicates that numerous other undocumented sites exist in unsurveyed portions of the planning area. Therefore, evaluations of known sites, combined with additional surveys and/or site testing, are necessary to provide more

complete information about the prehistoric and historic use of the area, as well as National Register site eligibility.

Traditional Cultural Property (Traditional Uses)

A Traditional Cultural Property (TCP) is a place that is eligible for inclusion to the National Register of Historic Places because of the significant role the property plays in a living community's historically rooted beliefs, customs, and practices (Parker and King 1994:1). Currently, there are no traditional cultural properties that have been identified within the Upper Deschutes planning area. However, identification of those properties cannot be effectively accomplished without consulting with the groups and individuals who have special knowledge about, and interests in, the history and culture of the area. In view of those considerations, the existence of traditional cultural properties within the planning area will remain unknown until the appropriate level of background research, fieldwork and tribal consultation has been completed.

Plants of Cultural Significance to Contemporary Indian People

The Federal government, through treaties, congressional acts, court cases and executive orders has acknowledged their role and responsibility in consulting with Indian Tribes when federal actions may affect areas of traditional cultural significance (Hanes 1995:27-29). In keeping with the spirit of that obligation, the Bureau of Land Management recognizes that local Indian Nations have recognized interests to harvest a broad range of plant species found on BLM managed lands under the Prineville District's jurisdiction. Access to and availability of those species are considered by Indian governments a trust responsibility of the Federal government. A number of "cultural plant" species occur within the planning area. Cultural plants are defined as those plants which are used by native Americans for subsistence, medicinal, utilitarian, economic or ceremonial purposes (Hunn et al., 1998:526-536). See Appendix C-Cultural Plants In and Around the Planning Area for a list of culturally used plants that occur in and around the Upper Deschutes Planning Area.

Recreation Resources

Introduction

The BLM has traditionally managed recreation to provide a primitive and dispersed recreation experience, consistent with the large, wide-open landscapes that BLM manages. The planning area includes this traditional BLM recreation setting offered by large blocks of remote BLM managed lands situated further from the cities of Bend, Redmond, and Prineville. However, the planning area also includes BLM managed lands located within and adjacent to these rapidly growing cities. These "urban interface" lands are currently accessible from a wide variety of State Highways, County Roads, local roads, and directly from subdivisions and private property.

With the exception of the Lower Crooked Wild and Scenic River corridor, there are few developed recreation opportunities on BLM managed lands in the planning area. Special Management Areas that attract specific recreation uses include: 1) Badlands WSA; 2) Steelhead Falls WSA; 3) Lower Crooked River Wild and Scenic River; 4) Middle Deschutes Wild and Scenic River; and 5) the Millican Valley OHV area.

Adjacent areas of public lands include: 1) Deschutes National Forest; 2) Ochoco National Forest; 3) Crooked River National Grasslands; 4) State Parks, including Smith Rock State Park; Prineville Reservoir State Park; Cove Palisades State Park; La Pine State Park; and

Cline Falls State Park. Other outdoor recreation providers include the Bend Metro Park District and the Central Oregon Park District (Redmond).

Because of the wide variety of recreational opportunities and niches that BLM managed lands occupy, these lands receive daily visitation, not only from local residents, but from other areas of the state, as well as out of state. For example, while nearly all visitors to the small, isolated BLM parcel west of Redmond are typically adjacent residents, visitors from Eugene, Portland, and other areas of the Pacific Northwest may visit the Millican Valley OHV system or the Badlands WSA. Climbing opportunities at Smith Rock State Park and adjacent BLM managed lands attract out-of-state and international visitors.

Community Recreation Demand

Most of the BLM managed lands within the planning area are located in close proximity to the rapidly growing cities of Bend, Redmond, Sisters, and Prineville as well as the large unincorporated communities of La Pine and Crooked River Ranch. As cited in the 1994 - 1999 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP), the lack of time and distance from recreational resources were frequently cited as barriers, especially among younger households with children. For local recreation participation, there is an inverse relationship between frequency of participation and distance to facilities. As distance to facilities increases, participation declines.

The location of BLM managed lands in the urban core reflects a need to consider different types of recreational opportunities than those typically found on larger blocks of public land further removed from urban development. These lands may increasingly be used for local or community activities. As expressed in the 1994 - 1999 SCORP, household participation within a half-hour driving time from the residents home was ranked in order of preference:

1. Park walking/running (59.1 %)
2. Picnicking (49.6 %)
3. Unpaved trail use - walking and hiking (43.5 %)
4. Nature/wildlife observation (< 40%)
5. Sports/Games (30 - 40%)
6. Playground equipment (30 - 40%)
7. Botanical/Historical (30 - 40%)
8. Biking on pavement (30 - 40%)
9. Cultural events (20 -30%)
10. Golf (20 -30%)
11. Swimming pool (20 -30%)
12. Skating/skate boarding (< 10%)

Few, if any, of these activities are supported by BLM management or facility development on BLM managed lands in the urban interface area. Some of these activities such as trail use, are dependent on the large blocks of public land that BLM provides in the urban interface. Other activities, such as Historical interpretation, are dependent upon the cultural and historic resources still found on BLM managed lands.

Developed Recreation

The planning area contains relatively few developed recreation sites on BLM managed lands. Nearly all of these BLM sites are campgrounds along the Lower Crooked River and the Chimney Rock Segment Wild and Scenic River Corridor between Prineville and Prineville Reservoir. The remaining BLM recreation sites are staging areas at the Millican and Rosland Off Highway Vehicle (OHV) areas, primitive campgrounds, such as Steelhead Falls Campground on the Deschutes River, or picnic areas, such as Reynolds and Mayfield Ponds east of Bend. These sites do not have running water, paving or maintained roads. A few of these sites (Rosland OHV play area, ODOT Pit OHV play area and Steelhead Falls camp-

ground) have portable toilets. Many of these sites are difficult to access, some are located in residential areas, and few, if any, have directional signs or improved or designated parking areas.

No sites have been designed or maintained for group use, RV camping, picnicking, or day use activities on BLM managed lands in the planning area. For the most part, camping and picnic areas or other developed recreation opportunities are provided by National Forest facilities, State Parks, or Bend Metro Park District areas. With the rapid population growth in Central Oregon, many communities are finding a shortage of developed parks for picnicking, trail use, and for sports. As central Oregon continues to grow, the demand for recreation sites, for a variety of recreation opportunities, and access to outdoor recreation opportunities due to distance and poor public transportation will continue. In addition, BLM has received requests for Special Recreation Permits to accommodate a wide variety of group uses, including outdoor concerts and large group camps. These permit requests are difficult to accommodate due to the lack of designated or developed sites.

Overall, the demand for developed recreation sites is increasing as the area's population grows. Both Bend and Redmond are currently facing shortfalls in developed recreation sites such as playing fields. The Bend Metro Park and Recreation District has identified the Bend Pine Nursery parcel, a USFS managed parcel, as a possible sports park site. However, the district faces a shortfall of funds to make this project happen (Bend Bulletin, 5-17-01), and some local residents fear development of a sports park will result in increased traffic and nighttime light pollution. The Central Oregon Park District (Redmond) has identified similar needs for additional playing fields, and also for river access points and park areas that can serve groups. Facilities such as pavilions, that offer amenities such as water and electricity are typically booked solid during the summer (personal conversation, Katie Hammer, Central Oregon Park District). Deschutes County has expressed an interest in land exchanges or R&PP Act leases to develop a multi-use sports park, as well as to expand the Deschutes County fairgrounds. Crook County has expressed interest in using BLM managed lands at Barnes Butte as a community park (either through a MOU, R&PP lease, exchange or sale). Other communities have expressed desires to use BLM managed lands to develop small park facilities, such as fishing ponds.

Motorized Recreation Use

The generally flat terrain and open juniper forest vegetation throughout the planning area allows for relatively easy access for motor vehicles. The BLM managed lands in the planning area have been historically used for a variety of motorized recreation, including OHV trail riding, four-wheel drive use, hunting, and sightseeing. Over the past 25 to 30 years, public lands in central Oregon have been used both for dispersed motorized recreation and for a variety of organized group events, including motorcycle and four wheel drive vehicle races and hillclimbs.

Off-Highway Vehicle use is a major recreational activity on BLM managed lands in the planning area. With the exception of a few select parcels, such as the BLM managed lands adjacent to Smith Rock State Park, or the isolated Airport Allotment parcel at the Dodds Road/Alfalfa Market Road intersection, and certain smaller urban interface parcels, all BLM managed lands in the planning area are currently either designated as Limited (travel limited to existing or designated routes, or limited seasonally) or Open (cross-country motorized vehicle travel permitted). These lands include the Millican Valley area, lands east of U.S. Highway 97 between Bend and Redmond, the Cline Buttes area, and the Steamboat Rock area west of U.S. Highway 97 between Redmond and Crooked River Ranch.

OHV Use - Most OHV use occurs in the fall, winter, and early spring, when trail conditions favor riding. During the summertime, riding opportunities on most of the BLM managed lands are restricted by the softness of trails and the dusty riding conditions. OHV use occurs on BLM managed lands designated as "Limited" or "Open" within the planning area. OHV

use occurs from both local and out-of-area visitors. Many recreationists travel from communities on the west side of the Cascades to participate in OHV activities, partly because central Oregon offers riding opportunities when areas in western Oregon and Washington are too muddy for OHV use.

There has been an increase in quad (Class I) use in central Oregon (personal conversation, Dick Duford). This may be part of a larger demographic trend of more recreationists aging, and possibly reflects more family use.

Millican Valley is the only designated OHV system on BLM managed lands within the planning area (although several designated play areas also exist). Many other non-designated areas are popular for OHV use, including the Cline Buttes area, the Steamboat Rock area, and lands immediately east of Redmond. In addition to BLM managed lands, several other designated OHV areas exist in Central Oregon. Each of these OHV areas are different, and the differences in season of use, vegetation, topography, and views offer recreationists a variety of riding options. Winter riding opportunities are somewhat limited -- areas like East Fort Rock are often closed due to snow depth, while others areas (e.g., North Millican and South Millican) are seasonally closed to minimize impacts to deer. This has led to increased use at areas such as Cline Buttes as OHV enthusiasts seek a legal place to ride relatively close to town.

The current designated and maintained OHV riding areas in central Oregon are described below and Travel management areas are shown on Map 12-Travel Management Areas. The Christmas Valley area (located on BLM Lakeview District lands to the southeast of Bend) is the only place in Central Oregon that has dunes, and therefore is another attraction for both area and out-of-area recreationists. Generally, people who visit Christmas Valley don't visit other central Oregon OHV opportunities during their trip (Personal conversation, Dick Duford).

East Fort Rock (Deschutes National Forest) - The East Fort Rock OHV area includes 315 miles of trail in an area of 110,000 acres located east of Bend and south of U.S. Highway 97. This area was historically the predominate OHV use area on the Bend Fort Rock District of the Deschutes National Forest (East Fort Rock OHV EA, 1993, page 7) East Fort Rock offers all day riding opportunities, as well as several play areas which are often used by group members who do not wish to do trail rides. The East Fort Rock OHV is focused towards motorcycle (Class III) and quad (Class I) use, and does not have routes developed for full size four wheel drive vehicles (Class II). The area receives both local and non-local use. The trail system is open year-round, however, most riding occurs in the Spring and Fall. Hot and dusty conditions tend to limit use from mid-July through September. Cold and snowy conditions generally limit use from mid-December through March. Beginning in late June, many of the non-local users stay home and ride in areas on the coast (e.g., Tillamook State Park) that have dried out enough for their use.

Henderson Flat (USFS, Crooked River National Grasslands) - The Henderson Flat OHV area is located east of U.S. Highway 97, between Terrebonne and Madras. While this area only has about 18 miles of trails, the open landscape and long-range views make it highly scenic. This area is closed each winter from December 1 to March 31 to limit soil compaction and erosion. Some opportunity may exist to open the area during dry winters, however, an amendment to the Ochoco National Forest Plan would be required to allow this. Henderson Flat seems to get more local use than other designated areas (personal conversation, Dick Duford), although the Millican Plateau also gets a lot of local use from Prineville and Bend/Redmond. An additional 35 miles of trail could be added to the existing designated system at Henderson Flat, however, funds are currently not available to enlarge this system. There has been some interest in developing a larger trail system that links the Henderson Flat area to trails on the Ochoco National Forest, because these trails would offer riding opportunities on suitable soils and at more reasonable temperatures during the summer.

Edison Butte (Deschutes National Forest) - This is a higher elevation trail system than the rest of the designated systems in Central Oregon, and also one that uniformly more difficult and technical than all other designated systems in Central Oregon. The Edison Butte trail system has 25 miles of trail, so it does not offer any all day riding opportunities. The trails go through the Mt. Bachelor saddle, an area of Hemlock/Fir forest with cinder soils. The area is open in late summer/early fall, depending on the snow pack. During the winter, the area is used as a snowmobile trail system. The area is not that well known, although it has been listed on the Central Oregon Combined Off-Highway Vehicle Operations (COHVOPS) opportunity guide for several years.

Green Mountain (Ochoco National Forest) - Green Mountain is an 8.5 mile linear trail, open for use by motorcycles and quads. The trail is open year-round, except when snow, fire, or wet soil conditions necessitate a temporary closure.

Play areas - Seven material sites (pits) are listed as OHV play areas in OHV opportunity guides prepared by the BLM and USFS. These include 4 pits at East Fort Rock (2 major pits and 2 smaller pits), one at Rosland in La Pine, another in North Millican, and the ODOT pit. Pits are beneficial components of a larger trail system, because often some people in a larger visiting group don't want to ride on the trail system, and prefer to ride in a specific location.

Millican Valley OHV Area - The Millican Valley OHV area is located east of Bend and covers a north-south area extending roughly from U.S. Highway 20 north towards Prineville. The current boundary encloses 82,886 acres, of which 60 percent is located within Deschutes County and 40 percent is in Crook County, Oregon.

Three areas have been designated for OHV use: Millican Plateau; Millican South; and Millican North. Each area includes a designated road and trail system and different seasons of motorized use (See Table 3G). In addition, the "ODOT Pit," owned by Deschutes County and the State of Oregon, is managed by BLM for OHV use. The ODOT pit is a large play area (10 acres) near the old town of Millican directly off of U.S. Highway 20, and provides a large percentage of the "pit" riding opportunities in the OHV area.

In FY 2000, OHV visitor use was approximately 15,000 user days. Road and trail riding at the Millican OHV area occurs year round but approximately 80 percent of the use is concentrated from November to May. In FY 2000, January through April was considered the main use period where approximately 60 percent of the total use for the year was during this period. During the months of May and June, OHV riding opportunities increase throughout the state and there are more attractive areas for the remainder of the year. This directs much of the OHV use away from Millican.

Approximately 75 percent of the riders come from the Portland, Salem and Eugene areas. The amount of use varies in each area and for each vehicle type. Only a small percentage (less than five percent) of the use occurred in the Millican South Area. The low use in the

Table 3G. Designated Road and Trail Systems Seasons of Use

ACTIVITIES	Millican Plateau	Millican North	Millican South
Number of Acres	29,212	35,423	18,251
Season of Use	Year Round	May 1 to November 30	August 1 to November 30
Road Miles	48	27	29
Trail Miles	63	61	12

Table 3 H. Visitor Use Days by Percent and Vehicle Type on the Designated Trail System[1]

Vehicle Type	Total Area	Plateau	North	South
Class I (ATV)	5	25	20	10
Class II (vehicle)	5	0	10	20
Class III (motorcycle)	90	75	70	70

[1]Use calculated from 1999/2000 monitoring data.

south area is due to the limited season of use and during summer when desert-type riding is not as attractive as other areas (e.g., forested, or higher elevation areas). Table 3H. describes the visitor use and vehicle types from monitoring data collect during FY1999 and 2000. The greatest percentage of use comes from motorcycle (Class III vehicle types) in all areas.

Non-Motorized Dispersed Use

Introduction - A wide variety of non-motorized, dispersed recreation uses occur on BLM managed lands in Central Oregon. These include trail use (mountain bicycling, horseback riding, hiking and running, etc.), rock climbing, fishing and hunting, target shooting, rockhounding, wildlife viewing, visiting historic sites, and other educational activities. Although no user surveys have been done, much of this use is focused on specific areas, such as the Deschutes and Crooked River Canyons, several Dry River Canyons, the Badlands and Steelhead Falls Wilderness Study Areas, BLM managed lands adjacent to Smith Rock State Park, and Horse Ridge. Several irrigation canals and ponds in the planning area receive regular visitation and use by recreationists.

Equestrian Use - Along with OHV use, equestrian use is one of the major dispersed recreational activities on BLM managed lands in the planning area. Equestrian use is dispersed throughout the planning area. Often, residents adjacent to BLM ride directly from their houses or rural subdivisions onto BLM managed public lands.

Areas of concentrated equestrian use include the Cline Buttes area, particularly the Dry Canyon area south of State Highway 126 and west of Barr Road; the Badlands WSA, most BLM managed lands adjacent to Crooked River Ranch, the BLM managed lands adjacent to Smith Rock State Park (Gray Butte trail), many BLM managed lands around the community of La Pine, and BLM managed lands west of Tumalo. Many of these BLM managed lands are used to access longer trail ride opportunities on adjacent USFS managed lands. Large, group rides are relatively commonplace on BLM managed lands, although no designated or maintained trails exist on BLM managed lands for equestrians, and no staging areas have been developed for their use. The lack of developed trailhead parking areas has led to a proliferation of roads and disturbed areas at popular, informal use staging areas such as State Highway 126 at Deep Canyon (between Redmond and Sisters). In other locations, the lack of developed or maintained trails has created unsafe conditions for riders, or has resulted in erosion and resource impacts as existing trails degrade or new trails are created. Conflicts are occurring between equestrians and other trail users, including mountain bicyclists and OHV users. This has led to requests from equestrians to have trails or areas designated only for non-motorized, non-mechanized use.

Hiking/Running - Areas with the most significant scenery or topography that provide for an interesting hike include the Smith Rock area BLM managed lands, the canyon complex at the western edge of the Cline Buttes block of BLM managed lands, the Dry Canyon located adjacent to U.S. Highway 20 east of Bend, the Badlands WSA, Horse Ridge, Smith Canyon (North Millican area), and the Steelhead Falls WSA. Hikers and runners also visit the Horse Ridge and Skeleton Fire area east of Bend and the North Unit and other canals on BLM managed lands close to developed areas. Evening walks and hikes by adjacent residents are popular on BLM managed lands.

Trail hiking opportunities on BLM managed lands in the planning area are limited by the lack of identifiable, designated and signed trails. Only a few developed and maintained hiking trails exist on BLM managed lands in the planning area. These include short trails at Steelhead Falls WSA and at Chimney Rock on the Lower Crooked Wild and Scenic River. Both of these trails are short, out and back hikes. Many user created hiking trails lead from parking areas to the Deschutes or Crooked River within the planning area. However, these trails are not marked, and most are difficult or dangerous access routes to the rivers. The steep slopes and trail conditions surrounding Crooked River Ranch typically result in several accidents each year (personal conversation, Pat Reitz, Crooked River Rural Fire Protection District). In many cases, the access roads leading to these trailheads are rights-of-way roads that lead to residences on riverfront inholdings within larger BLM parcels. There have been conflicts at these locations as adjacent residences seek to limit access to visitors who park near their private property, arrive and leave late at night, light bonfires, party, and sometimes trespass on private property.

Mountain Biking - The opportunity to ride year-round makes Central Oregon an emerging mountain biking hotspot. Mountain biking is popular on National Forest lands (Deschutes National Forest, Ochoco National Forest), the Crooked River National Grasslands, BLM managed lands, and also on lands managed by the Bend Metro Park and Recreation District. However, there are no trails designated for this use in BLM's transportation system. The BLM has no trail maps or recreation information specifically related to mountain biking.

Although no use figures are available, the demand for mountain biking opportunities on BLM managed lands is increasing. In the last five years, many guide books and maps have been published which show mountain bike routes on BLM managed lands. Unauthorized trail construction by mountain bike enthusiasts has occurred over this period on BLM managed lands east of Bend (particularly at Horse Ridge and Dry Canyon) and on lands adjacent to Smith Rock State Park. Over this period, the number of bike shops in Bend has also increased. The demand for mountain bike opportunities was projected in the Recreational Needs Bulletin, Oregon State Comprehensive Outdoor Recreation Plan (SCORP, 1991). SCORP data projected a 40 percent increase in demand for mountain bike opportunities in Central Oregon, the second highest increase out of the 8 survey zones in Oregon.

Mountain biking occurs throughout the planning area, however, areas of more concentrated use include trail use in the Gray Butte area, on BLM managed lands along U.S. Highway 20 east of Bend (Horse Ridge, Dry Canyon, Badlands WSA, and areas further east), Cline Buttes (downhill courses), and the area south of Lower Bridge Road. The maintenance roads along several irrigation canals on BLM managed lands are also occasionally used by mountain bicyclists. BLM managed lands adjacent to the Deschutes National Forest also are likely to receive mountain bike use from trail networks that occur mostly on National Forest System lands. The use of BLM managed lands by mountain bicyclists occurs primarily in the fall, winter, and early spring, as snow levels in the Deschutes National Forest close those trails to cyclists. During the summer, many of the trails on BLM managed lands become too soft and dusty for mountain bike use.

The Horse Ridge area of BLM managed lands is considered the newest and best area for mountain bicycling on BLM managed lands in central Oregon. However, private lands in the Cline Buttes, Horse Ridge, and other areas make development of designated trail systems

more complicated than many National Forest system lands in Central Oregon. As the private lands at Cline Buttes, Horse Ridge and other areas are developed, the ability to create longer trail loops for mountain bikes and other uses will decrease.

While the maintained trails in the Millican Valley OHV system are open to mountain bike use, most riders prefer to use trails that are not shared by motor vehicles (pers. conversation: Phil Hammerquist, Central Oregon Trails Alliance). Trails in the East Fort Rock OHV area (Deschutes National Forest) are also used by mountain bicyclists, and organized, competitive events have been held there. However, there is a concern among mountain bicyclists that many of the trails they have constructed will be found by motorized users, and the resulting motorized use will widen these singletrack trails and ruin them for mountain bike use.

Rock Climbing - Rock climbing is an extremely popular activity at Smith Rock State Park and, to a lesser extent, on adjacent BLM managed lands. These BLM managed lands include some of the routes in the Upper Gorge area, where the columnar basalt columns along the river provide climbing opportunities. In general, these routes are not as heavily used as the routes in the Lower Gorge area that are on the west side of the river and close to the parking area at Smith Rock State Park. BLM managed public lands also include the Marsupial Crags, rock spires located east of the road locally known as "Burma Road". Again, because this area is more difficult to access from the State Park center, it likely receives fewer visitors. At one time, these routes were more accessible, but the Burma Road was closed to motor vehicles in 1994, and this climbing area must now be reached by foot.

The level of use and lack of maintenance on user trails on BLM managed lands adjacent to Smith Rock State park has resulted in vegetation disturbance and soil erosion in some areas. At Marsupial Crags, the access trails are located on steep and loose slopes, and have resulted in erosion that is visible from a considerable distances.

Another climbing area of note within the planning area is the Sisters Bouldering Area, a 120-acre parcel of BLM managed lands northeast of Sisters in Fremont Canyon. Although this area is designated as "Open" in the 1989 Brothers/La Pine RMP, some roads into the parcel have been blocked with logs which define a parking area near the main climbing boulders. The Fremont Canyon area has a combination of BLM, State, County and private land ownership. Land exchange proposals for blocking up federal lands have been considered in the past, as Deschutes County has sought to sell county holdings in the area. These efforts have been unsuccessful, and the sale and residential development of lands adjacent to this climbing area is likely.

Stout Cave was developed with sport climbing routes in the early 1990's. Many routes were developed in the cave, with a total of about 80 bolt placements (drilled holes with expansion bolts and small metal plates or hangers) to protect climbers. Climbing route development in Stout Cave occurred about the same time as route development in other caves managed by the Deschutes National Forest. The development of climbing routes in these caves have resulted in conflicts between climbers, cavers, and others interested in cave management and cultural resources. Specific cave management strategies on the Deschutes National Forest are being assessed in the Road 18 Cave Management Strategy EA, which has yet to be completed. Stout Cave is currently closed to all uses, pending completion of the RMP.

Target Shooting - Target shooting is a longstanding and widespread activity on BLM managed lands throughout the planning area. In addition to dispersed use on BLM managed lands, target shooters also use National Forest system lands and several shooting ranges. Shooting ranges include the Redmond Rod and Gun Club and the Central Oregon Shooting Sports Association Range, which is located on BLM lands along U.S. Highway 20 at Millican Valley.

Over the past decade, the increase in the number of subdivisions located adjacent to BLM managed lands has increased the number of target shooters and the number of complaints

about unsafe target shooting practices. Concerns have included safety, litter, poor choice of shooting areas, noise, damage to juniper trees, and disturbance to wildlife. The population growth of Central Oregon has resulted in increased numbers of recreationists on BLM managed lands, some of which object to the amount of gunfire in areas that they use for hiking, horseback riding, mountain bicycling, walking pets and other activities. While many target shooters are highly conscientious about leaving no trace, the intense use of an area for target shooting often leaves the area strewn with garbage and with juniper trees cut in half by repeated gunfire.

Areas where resource damage or social conflicts occur include: an area south of Prineville and east of the Millican Road; an area along Lower Bridge Road south of Crooked River Ranch; the powerline corridor near the Redmond sewage treatment plant; areas near Alfalfa Market Road; a material site pit near the 61st/Young Avenue intersection in Redmond; and BLM managed lands immediately east of Bend along U.S. Highway 20.

Rockhounding - Due to the variety and types of minerals (e.g., obsidian, jasper, thundereggs, agates) available, central Oregon is a popular destination for rockhounds throughout the United States. The Crook County Chamber of Commerce estimates that about 80% of their information requests are related to rockhounding in central Oregon.

Most rockhounding use occurs to the east of the current planning area, and includes large areas such as Glass Butte and Congleton Hollow. The BLM receives nationwide inquiries about Glass Butte, and the area is a favorite destination for flint-napping groups. Areas on the Ochoco National Forest are also popular rockhounding sites. Most rockhounding within the planning area occurs in the Taylor Butte, Prineville Reservoir, and Ochoco Reservoir Areas. Many rockhounding areas were designated in the Brothers La Pine RMP. The designated rockhounding areas within the planning boundary are listed below and shown on Map 13-Mineral Sites, Public Rockhounding Areas, Military Training Area.

- Prineville Reservoir Rockhounding Area
- Reservoir Heights Rockhounding Area
- Fischer Canyon Rockhounding Area
- North Ochoco Reservoir Area
- Eagle Rock Area

Rockhounding areas (both public and private, designated and non-designated) are being actively promoted by individuals, groups, and municipalities through scheduled events and internet postings. Use is spreading to non-designated areas. Consistent and regular rockhounding in some areas results in dense road networks, and associated impacts include OHV use, trespass, impacts from regular camping with no sanitation facilities, watershed degradation, and possible cultural resources impacts.

Water based recreation

Water based recreation on BLM managed lands in the planning area is generally limited to fishing and wading or swimming. Areas of BLM managed lands regularly visited for water based recreation include:

- BLM managed lands surrounding Prineville Reservoir;
- the entire 8-mile stretch of the Lower Crooked (Chimney Rock Segment) Wild and Scenic River;
- a dozen access points on the Middle Deschutes River, including the Steelhead Falls WSA;
- the Lower Crooked Wild and Scenic River adjacent to Crooked River Ranch;
- several ponds, most notably Reynolds and Mayfield Ponds east of Bend; and
- several irrigation district canals.

Prineville Reservoir - Prineville Reservoir receives the most recreation use of any water body in the planning area. The predominant use of the reservoir is by anglers, boaters, and the adjacent Prineville Reservoir State Park is heavily used for camping. A combination of State Park, Bureau of Reclamation, BLM, and private lands surround the reservoir. Prineville Reservoir State Park and BOR manage recreation use at and around the reservoir. BLM provides management of upland areas, concentrated mainly on grazing and watershed management.

Lower Crooked (Chimney Rock Segment) - The Chimney Rock segment of the Lower Crooked Wild and Scenic River is a heavily visited section of river, with 9 campgrounds, two day use areas, and many parking areas along State Route 27. The river is popular for fly-fishing, with some kayak use.

Middle Deschutes River - Most of the access points to the Middle Deschutes occur on BLM managed lands within residential areas, and conflicts between recreationists and adjacent landowners are common. In response, BLM has issued emergency closures to vehicle use and shooting at a number of these sites. Due to low water levels during the summer, the Middle Deschutes River offers limited opportunities for kayaking.

Lower Crooked Wild and Scenic River - No safe access exists to the Lower Crooked Wild and Scenic River corridor located downstream of the U.S. Highway 97 bridge. The steep canyon walls and adjacent private lands on both sides of the river make access difficult. Hollywood Road at Crooked River Ranch was used by recreationists who walked or rode horses down to the river, but that access was closed by the private landowner several years ago. Recreationists either trespass or use other steep and hazardous access routes down into the canyon.

Upper Deschutes Wild and Scenic River - The Upper Deschutes Wild and Scenic River segment features primarily flatwater boating with limited whitewater and excellent trout fishing opportunities. All of the BLM managed lands along this stretch of river were conveyed to the State of Oregon for the creation of La Pine State Park.

Reynolds and Mayfield Ponds receive regular visitation from the public. Reynolds pond supports a better fishery, is in better condition and has more picnic tables than Mayfield Pond, and therefore receives more visitation. Reynolds Pond is located on the perimeter of the Badlands WSA. Visitors must walk over an irrigation canal bridge to access the pond.

While Reynolds Pond was created to provide a recreation opportunity, Mayfield Pond is created as a result of irrigation canal overflow and has historically been used as a water source for cattle grazing. The pond has been fenced to eliminate mud-bogging by four wheel drive vehicles, however, the fence typically gets cut several times a year. Mud-bogging and cattle grazing has limited the growth of riparian vegetation at the pond. Although Mayfield Pond is used for fishing and picnicking, other popular uses include target shooting, hunting, and dog training. Both ponds are popular sites for horseback riders, and both sites receive evening use, including late night parties.

The Central Oregon and North Unit Irrigation Districts, together with the Bureau of Reclamation, operate and maintain several canals in the planning area. In the summertime, these canals have abundant water flows, and the North Unit canal in particular gets used by kayakers looking for a place to paddle close to Bend and Redmond The use occurs at various locations, dependent on the location of man-made rapids and possibly in response to irrigation district patrols, which view this use as trespass.

Hunting

Hunting is a major recreational activity in the planning area, generally occurring in the late summer and fall. Hunting opportunities range from the more mountainous areas on the

Ochoco and Deschutes National Forest to the lower sage and juniper woodlands areas on BLM managed lands, including areas close to Bend, Redmond, and other communities and subdivisions. The variety of terrain and vegetation in central Oregon provides good diversity and opportunities for hunters. The planning area receives visitation from local, statewide and out-of-state hunters.

Big game animals hunted in the planning area include mule deer, elk, and pronghorn antelope. A variety of predators are hunted, including bobcats, cougars, and coyotes. In particular, winter coyote hunting is popular in Central Oregon. There is no Bighorn Sheep season within the planning area. There is also no open season authorized for exotic sheep (e.g., Mouflon Sheep) on public lands in the planning area, although private landowners can authorize hunts on private lands.

The planning area includes all or portions of five hunting units established and regulated by Oregon Department of Fish and Wildlife (ODFW). ODFW establishes Management Objectives (MOs) for each hunting unit. Four of these units are arranged around Redmond, with U.S. Highway 97 and U.S. Highway 26 dividing the four areas. The Ochoco Unit lies to the east of Prineville and State Route 27.

1) Upper Deschutes Hunting Unit - Southwest of Redmond. The area west of U.S. Highway 97 and south of U.S. Highway 26 (includes the Cline Buttes and Tumalo areas, and a portion of the La Pine area). Hunting opportunities include big game elk and deer, upland birds, limited opportunities for waterfowl, and year-round opportunities for predators.

2) Paulina Hunting Unit - Southeast of Redmond. The area east of U.S. Highway 97 and south of both U.S. Highway 26 and U.S. Highway 20 (includes the Bend-Redmond parcel of BLM managed lands, Badlands WSA, Horse Ridge, and a portion of the La Pine area). Hunting opportunities include upland birds, waterfowl, deer, elk, antelope, and predators.

3) Metolius Hunting Unit - Northwest of Redmond. The area north of U.S. Highway 26 and west of the Crooked River (includes a portion of the Cline Buttes area, BLM managed lands around Crooked River Ranch, and BLM managed lands north of sisters). Hunting opportunities include deer, elk, antelope, upland birds, and limited opportunities for waterfowl.

4) Grizzly Hunting Unit - Northeast of Redmond. The area east of the Crooked and Deschutes River canyons and north of U.S. Highway 26/Prineville. Hunting opportunities include deer, elk, upland birds, and limited waterfowl.

5) Ochoco Hunting Unit - the area east of Prineville, south U.S. Highway 26 and Mitchell, and west of Dayville. Hunting opportunities include antelope and upland birds. Waterfowl hunting opportunities are limited, except for the area around Prineville Reservoir.

Several of the units in the planning area have general elk and deer tags, with no limit on hunters for a short hunting period. These often lead to large numbers of hunters on BLM managed lands. In the case of the Badlands WSA and other areas with a designated route system, the number of hunters in a general hunt areas often result in violations of road closures and designated route systems. For 2001, the general hunts are:

Paulina Unit	Oct. 24 - 28th for Bull Elk (centerfire firearm)
Upper Deschutes	Oct. 20 - 26th for Bull Elk (centerfire firearm)
Metolius	Oct. 20 - 26th for Bull Elk (centerfire firearm)

There is a general archery season for deer and elk throughout the planning area. This general hunt also leads to many hunters on BLM managed lands, and difficulties in enforcing vehicle closures and designated route systems in areas like the Badlands WSA. The general archery season is from August 25th to September 23rd.

There are no management objectives for numbers of antelope in hunting units within the planning area; however, a limited number of tags are available for antelope in the planning area. Tag numbers are determined by a percentage of the current population for each area.

Waterfowl and upland game bird hunting is also popular in the planning area, although many waterfowl hunting opportunities occur on private lands. A select number of waterfowl hunting opportunities are available on BLM managed lands along the Crooked River and Deschutes River, as well as at various seasonal and perennial ponds and canals (e.g., Mayfield Pond and Reynolds Pond).

Upland game bird hunting opportunities include Quail, Chukar and Hungarian Partridges. Quail are plentiful throughout the planning area. Chukar are hunted in the Taylor Butte/ Prineville Reservoir area, and in both the Crooked and Deschutes River Canyons. No sage grouse hunting is permitted on the hunting units within the planning area because these areas are considered to be the edge, or fringe of the bird's current range. Areas to the east of the planning area do have controlled hunting opportunities under permit for sage grouse.

Many of the larger ranches in the planning area offer fee hunting opportunities, where landowners sell access rights to private hunters or to commercial outfitter/guides who lead clients on hunts on private lands. Shooting and hunting on BLM managed lands near residential areas has caused concern from adjacent private property owners. In some cases, residents of subdivisions that have enacted shooting closures complain that unrestricted shooting and hunting on BLM managed lands adjacent to their subdivisions are creating safety hazards.

Land Uses

Livestock Grazing

Livestock grazing is administered on 117 allotments on BLM managed land in the planning area. Allotment boundaries are illustrated on Map 14-BLM Land Containing Grazing Allotments and Areas of Closed Range. Information specific to each of the allotments in the planning area is provided in Appendix D - Livestock Grazing Management Summary. Twenty-one of these allotments are "inactive," or not held by a specific grazing permittee. These inactive allotments have not been grazed for ten years or more, though they are available for grazing to qualified applicants, and with considerable investment in fences, gates, and water sources. Scattered parcels of BLM managed land (40,729 acres), intermixed with other ownerships and outside allotment boundaries, are also ungrazed and not allotted to specified grazing permittees. In the northern planning area, these parcels are unavailable for grazing. In the La Pine area, these parcels are available for grazing to qualified applicants, though most of these parcels require installation of fences, gates, and water sources prior to livestock turnout.

Annual licensed grazing use in 1990, 1995 and 2000 was 19,839 animal unit months (AUMs), 14,418 AUMs, and 12,400 AUMs, respectively, on BLM managed land in the planning area. An AUM is 800 pounds, or the amount of forage (air dry) a cow and her calf eat in one month. All grazing permits are for cattle, except for three which authorize horses or horses and cattle.

Livestock grazing is historically important in the planning area both culturally and economically, although the contribution from BLM managed public land (about 3% in 2000) is small

relative to total production. Grazing permittees in the planning area use BLM managed land for about 20% of total feed. In Oregon, federal permittees use agency forage for 23% of total feed (Frewing-Runyon 1995). Eastern Oregon permittees are less dependent on public forage. The average reliance of eastern Oregon permittees on federal forage (BLM and Forest Service) is 11%.

The amount of grazing authorized on BLM managed land in the planning area has declined approximately 38% since 1990. Evidence indicates that, as ranchers grow older, more leave the field than enter it. In some rural areas experiencing rapid population growth, base properties (home ranches where herds are kept for part of the year) are being converted to resort or residential developments. The reasons for this are varied.

A recent study (Rowe et al., 2001) in a rapidly developing area in Colorado examined the factors influencing ranchers who graze on public land to sell their base property (private land to which the grazing privileges are attached). "Since ranch land is often the primary target for subdivision, ranchers play an important role in this pattern of land use change," say the authors. A rancher's decision to sell is impacted by changes in federal grazing policy, local land-use planning efforts, and development of surrounding land (which can increase taxes, and create the need for more frequent checks of gates, fences, and livestock). But it is also influenced by non-economic factors, say the authors. "Ranchers continue to ranch despite financial difficulties. They stay because of...sense of place, attractiveness of lifestyle, family values, and tradition."

In the recent past, the public was primarily concerned about the ecological effects of grazing. As grazing management has adapted to address these concerns (shorter grazing seasons, less repeated spring/summer grazing, and less grazing in riparian areas), and ecosystem health has improved, the criticism has shifted to the economics of grazing livestock on public lands. Urbanization in central Oregon has created an increased need for alternative uses of public land (urban expansion, increased recreational activity), and the contribution public land grazing makes to the local economy may be minimal compared to the benefits derived from other uses of the land (Holechek 1991). In some areas, public land may not be able to accommodate all user groups. The BLM receives (or will receive) formal and informal requests from members of the public to end grazing on specific parcels of public land within the planning area, for reasons ranging from economics to ecology to recreation.

Timber

Timber production from BLM-managed lands in the planning area is relatively minor. Timber supply in central Oregon is still primarily from National Forest lands, although sale offerings from the Forest Service have steadily declined since a peak was reached in the mid-1980s. Large industrial timber suppliers in Central Oregon include Crown Pacific Ltd., which owns large timber tracts south of La Pine and northwest of Bend; and U.S. Timberlands Services which owns a large tract just west of the Ochoco National Forest.

Timber contributes to local and regional economies by providing jobs and generating revenue. Direct economic benefits are in the form of employment from logging and manufacturing of the raw resource. A variety of indirect benefits are generated from production of value-added products and the need for supporting goods and services. The BLM allocates four percent of Public Domain gross timber receipts to county governments for use in building and maintaining roads and schools. Also, a state-administered forest products harvest tax is collected from all public and private timber harvest in the state of Oregon. The current rate is $3.19/MBF. This tax helps fund state forestry programs such as firefighting, fire prevention, research, and administration of the Oregon Forest Practices Act.

On BLM managed lands in the La Pine portion of the planning area, 40,134 acres (96%) of lodgepole and ponderosa pine are managed as commercial forestland. This includes 1,826 acres of commercial forestland managed by the BLM within the La Pine State Park. Com-

mercial forestland is defined as forestland that is producing, or has the capability of producing, at least 20 cubic feet of wood per acre per year of a commercial tree species. BLM commercial forestland in the La Pine portion of the planning area represents 2.4% and 1.1% of the total commercial forestland base in Deschutes County and Klamath County, respectively.

A timber inventory for La Pine, conducted in 1982, identified a sustained yield and allowable sale quantity (ASQ) of 3.3 MMBF/year. However, due to the extensive beetle-caused mortality, the 1989 Brothers/La Pine RMP called for an accelerated harvest program, harvesting up to 14 MMBF annually. This program had four primary objectives: 1) reduction of extreme fire hazard; 2) salvage of dead and dying timber; 3) successful reforestation; and 4) increase subsequent growth of commercial tree species. Since the inception of this treatment program, the La Pine area has become the focus of timber management for the District. The silvicultural prescription applied was primarily seed tree cut with a minor amount of commercial thinning and shelterwood cuts. The treatment objectives have been achieved to varying degrees, although each of these original objectives remain as concerns in certain areas. Beyond the accelerated harvest program, current RMP direction is to apply future timber management based on the "productive capacity of the land."

Prior to the early 1980s, timber harvest in the La Pine area was light and infrequent. Harvest of the larger ponderosa and lodgepole pine occurred with individual tree selection as the primary harvest method. Harvest records for this time period are incomplete.

In the northern portion of the planning area, 977 acres are classified as commercial forestland. These are low-elevation, dry-site ponderosa pine stands, located just to the east of the Deschutes National Forest, in the Tumalo, Fremont Canyon and Squaw Creek areas. There are also small stands of commercial forestland located on Grizzly Mountain and east toward the Ochoco National Forest.

The amount of the Brothers portion ASQ for the northern area is approximately 85 MBF/year. Commercial forestland in the northern area represents a small fraction of one percent of the total commercial forestland base in Deschutes and Crook Counties.

The northern area has received limited commercial harvest during the last 50 years, and no commercial harvest in the last 20 years. The harvest that did occur was generally a broad-area selection harvest of the larger diameter ponderosa pine with the objectives of salvage and harvest of mature trees. This practice fit the general silvicultural goal of public land forest management of that era: to remove mature and over-mature trees; and to open up the stand to release residual understory trees, which aimed to convert the slower growing old-growth stands to younger, more productive "managed" stands.

Presently, juniper in Central Oregon is not being used consistently as a timber resource. Juniper's small size, poor form, defect, and handling difficulties are such that its utility for conventional forest products is currently not economically feasible. However, juniper has attained a local niche market for a few specialty products such as paneling, flooring, and house logs. Testing and research continues in the areas of harvesting, milling, drying, and manufacturing for a variety of timber products. Refinements in processing juniper and other economic factors may lead to an increase in future demand for this resource.

Harvest and processing of timber and wood products is still a major source of income in Central Oregon, but is declining in relative economic importance. Timber sales on BLM managed lands within the planning area are expected to be very minor for the next few decades until La Pine timber stands regenerate and grow to commercial size. However, non-commercial forest management for fuels reduction and ecosystem health are expected to increase. Treatments such as small tree thinning, pruning, brush cutting/mowing, and prescribed burning would be accomplished through contracted services and other means of local employment.

Firewood

Public firewood cutting continues to be a popular traditional use of BLM-managed land in the planning area. For the period 1996-2000, the average annual harvest of firewood from the planning area was 1,062 cords.

The La Pine area, in particular, has received heavy use since the beginning of the beetle outbreak in the late 1970s. At that time, BLM began a personal-use firewood program in the La Pine Block to reduce the fire hazard and to help supply the local demand for firewood. Beetle-killed trees are still available for firewood, however, the amount of this resource is diminishing due to heavy use, decay, and resource concerns.

The juniper woodlands in the northern area had also been a traditional source of juniper firewood for the public for many years. The area west of the Powell Butte Highway and north of Alfalfa Market Road had been used heavily by the public, mostly Bend residents, since 1982. Beginning in 1995, the traditional use areas near Bend were closed and new areas were designated several miles to the east. Closing of the traditional areas was done for two reasons: increasing awareness of old-growth values and aesthetic considerations. Public use of new juniper woodcutting areas near Millican Road and State Route 27 has been much reduced (less than 200 cords per year) due to smaller diameter trees and greater distance from Bend and Redmond.

Most of the firewood from BLM-managed land is now sold through the Central Oregon Initiative Interagency Firewood Program. Firewood permits for the Deschutes/Ochoco National Forests and BLM Prineville District currently sell for $10 per cord with a maximum purchase of eight cords per household. Commercial firewood permits are also sold by the BLM on a limited basis; usually to achieve resource objectives such as post-timber sale fuels reduction, ROW corridor salvage, or thinning for forest or rangeland health.

Economic benefits of woodcutting are realized by local communities through sale of such items as chainsaws, gas, oil, and accessories. Commercial firewood sales provide some minor employment and a firewood commodity. Four percent of BLM firewood sales goes to county budgets for roads and schools. Twenty percent of sale receipts is returned to the BLM districts for use in BLM road maintenance and resource management.

Despite the population growth, local public demand for firewood appears to be stable or declining slightly in recent years. This trend is due, in part, to an increase in use of highly efficient heating systems such as natural gas appliances and heat pumps. Old, inefficient wood stoves are also gradually being phased out and replaced by more efficient, certified stoves. The phase-out of old stoves was prompted by a 1988 Oregon law restricting wood stove sales to cleaner-burning certified units and a subsequent 1995 Bend city ordinance requiring removal of non-certified stoves upon sale of a home.

Other Vegetative Products

Permits are issued for a variety of other vegetative products harvested from the forest and rangelands within the planning area. Some of these products include: posts, poles, juniper boughs, juniper berries, hobby/furniture wood, lichen, tree and shrub transplants, and pine cones. Of these, permits for juniper boughs are the most common. Most of the permits to harvest juniper boughs are sold to large commercial operators. The boughs are used in the making of Christmas wreaths which are then sold at retail throughout the country. Interest in juniper boughs fluctuates with the berry crop. In the period 1996-2000, an average of 170,112 pounds of juniper boughs were sold on the BLM Prineville District. Of this total, an estimated 75% came from within the planning area.

Demand for forest and range vegetative products is increasing in direct proportion to the local population increase. Permits for landscaping products (i.e. snags, tree and shrub

transplants) are increasing as the use of xeric plants and natural materials becomes more popular. The economic benefits of these material sales is from the commercial harvest of juniper boughs, and a few other materials used to make medicinal products, furniture, and craft items.

Minerals

The high growth of the communities in central Oregon have lead to an increased demand for the development of natural resources within the region. Aggregate sources within the area have been depleted due to the high demand. Local communities and agencies have looked to the BLM as a logical source for these materials. Recently ODOT initiated a study within the planning area to identify potential sources of aggregate for the transportation system within the region. Based on public input, ODOT is awaiting the completion of the Upper Deschutes RMP Amendment prior to selecting any new potential aggregate source in the planning area. The 1989 Brothers La Pine RMP identified the need for these resources by providing management direction specifically for this activity. This management direction consisted of having large areas open for potential mineral development. Some of these areas are now being impacted by adjacent urban growth which is leading to land use conflicts.

Past mineral activity in the planning area has included exploration for and the production of sand, gravel, cinders, decorative stone and bentonite. Minor amounts of perlite, mercury, gold have been produced from scattered sources. Exploration for geothermal resources in the last 15 years has not shown any commercially viable geothermal locations in the planning area. Currently, the principal mineral activities are for the production of gravel and rock for the maintenance of county roads and state highways. The production of cinder for decorative purposes and sanding of road surfaces in the winter also occur.

The BLM administers three categories of mineral activities on public lands:

Locatable Minerals

Locatable minerals are those minerals for which mining claims can be located, such as precious and base metals, and some non-metallic minerals that possess unique properties (uncommon variety minerals). Two notices have been submitted under the BLM's Surface Management Regulations (43 CFR 3809). Although there are locatable mining claims within the planning area, the potential for further development is not likely due to the geology of the area. As of July, 2001 there were 7 federal unpatented mining claims within the planning area.

Salable Minerals

Salable minerals are common variety minerals such as sand, gravel, rock, and cinders that generally are purchased from the federal government. There are presently 20 mineral material pits located on BLM "managed" lands within the planning area. Over the past 10 years, nearly 1,000,000 cubic yards of sand, gravel, and rock have been produced within the planning area from quarries and pits for construction and maintenance of county roads and state highways. It is anticipated that the demand for minerals for road construction and maintenance will increase. Sales of sand and gravel to individuals have averaged about 2,500 cubic yards per year. During the same period of time, cinder production has varied from about 200 to 1,000 cubic yards per year (mostly for use on county roads). Theft of slab lava (a decorative stone) has been a problem in the Cline Buttes area for many years. Over the past 5-8 years, the demand for decorative stone has gone from a few tons a year to several hundred tons per year and is expected to continue to increase.

Leasable Minerals

Potential for the occurrence of oil and gas is moderate in the planning area. However, no areas are currently leased and no exploration is occurring. This situation could change if energy prices continue to dramatically increase as they have in recent times. Geothermal resources have been investigated and do not occur in the planning area at levels that can be economically developed.

Generally, BLM-administered land is open to mineral exploration and development under multiple-use management principles. However, there are two types of closures that can restrict these activities: discretionary and nondiscretionary.

Discretionary closures happen when management decides lands are not available for salable, leasable, or locatable entry. Discretionary closures are not formal withdrawals or classifications, and they may change without going through withdrawal or classification revocation or the regulation modification process. These discretionary closures may affect whether salable, leasable, or locatable minerals can be developed.

Nondiscretionary closures apply to lands formally withdrawn from mineral entry, lands closed to locatable mineral entry as a result of Recreation and Public Purposes (R&PP) and other classifications, and mineral estate retained in federal ownership pursuant to Sec. 203 of FLPMA. The Interior Board of Land Appeals ruled in 111 IBLA 217 that mineral estate reserved by the federal government under Sec. 203 of FLPMA is not open for locatable mineral entry until regulations are made known that provide for such entry.

Designations such Research Natural Areas (RNA) and Areas of Critical Environmental Concern (ACEC), off-road vehicle (ORV) restrictions, cultural resources, and threatened and endangered (T&E) species may constrain mining activities for locatable minerals.

Constraints on leasable and salable minerals would include those for locatable minerals, as well as other concerns such as visual resources and crucial deer winter range restrictions. Any special constraints affecting leasable or salable mineral exploration or development would be made a part of the site specific operating plan. The provision would be attached to the lease, permit, or contract.

Special Recreation Permits

Special Recreation Permits (SRPs) are issued by the BLM for commercial recreation use of BLM managed lands. Typically SRP's are issued on an annual basis for outfitter/guide activities such as hunting guides, commercial horse trail rides, rock climbing and hiking guide services, mountain biking guides, and for single-day events such as motorcycle races or endurance horse rides.

The BLM currently issues two annual use permits, both of which are for equestrian trail rides. One permit is held by Equine Management, which operates out of the Eagle Crest Resort, west of Redmond. The other is held by Rock Springs Guest Ranch, which operates from private land near Tumalo. In addition to these permits, several other fishing and hunting guide permits are issued in the planning area.

There has been a marked increase in the number of permits requested over the last several years, and in the number of commercial entities who are operating without a permit on BLM managed public lands. Permit requests have come from many groups, including mountain bike guide services, other equestrian guide services, schools and recreation districts, and race organizers. The Deschutes National Forest currently has about 27 recreation Special Use Permits (SUP's) for outfitter/guide services (personal conversation, Mark Christianson, USFS). The BLM currently manages very few permits due to limited recreation staff. Many new permit requests are for activities in the more scenic and popular BLM managed lands in central Oregon. These lands include Steelhead Falls WSA and Badlands WSA. The issuance of these permits for commercial use within a WSA requires that the BLM conduct an environmental assessment (EA). The time and staffing requirements to prepare EA's has led the BLM to deny such permit requests.

Other Uses

Unauthorized Occupancy and Use

Unauthorized occupancy and use is an ongoing problem in the planning area. Unauthorized occupancies typically are long-term stays on BLM managed lands, well beyond the permitted camping period. Frequently the individuals or groups engaging in such unauthorized use are repeat offenders.

Occasionally unauthorized occupancy occurs when adjacent landowners build buildings on or extend their yards onto public land. These situations often exist for many years until discovered in the course of surveying projects. Unauthorized uses typically involve the encroachment of small areas of public land from agricultural operations on adjoining private land; unauthorized right-of-way situations generally involve negligence. Resolution of such situations depend upon individual circumstances and may include issuance of temporary land use permits, leases or rights-of-way, disposal of the land either by sale or exchange, or removal of the unauthorized use.

To date, all of the identified unauthorized use situations have been reviewed. BLM is working with Crook County and Deschutes County to establish the correct boundaries during their land use planning processes in the Powell Buttes and La Pine areas, respectively. BLM is also working with Crooked River Ranch to establish proper property locations.

Visual Resources

Visual resources are the combination of land, water, vegetation, structures and other features that make up the scenery on BLM managed lands. While the high peaks of the cascades are the most dominant visual element in the planning area, BLM managed lands do possess important visual elements, in large part because they provide an open space view from residences throughout the planning area. Key visual elements of the planning area include landforms that provide both a backdrop to views, and in some cases, homesite locations with panoramic views. These include Cline Buttes, Powell Buttes, Horse Ridge, the Smith Rock area, and West Buttes. River Canyons such as the Crooked and Deschutes River, Squaw Creek, and several dry river canyons with dramatic cliff faces are also key visual elements that are sought out for recreational use as well as for homesites. In addition to these larger elements, many other features are valued for their scenic quality, these include old growth juniper stands, clearings in juniper stands that allow for long-distance views, wildlife viewing opportunities throughout the area, ranch or agricultural lands, and historical features.

A portion of State Route 27 adjacent to the Crooked River, was designated as a BLM National Backcountry Byway in 1988. The other State Scenic Highways in the area consist of various routes in the cascades, including one loop west of Sisters and another Southwest of Bend. Many other State and County roads in the area are identified as scenic tour routes by a variety of sources, including tourism boards, chambers of commerce, or recreational guides.

In rapidly growing Central Oregon, visual resource concerns are being voiced by many citizens concerned about highly visible developments, including buildings, cell phone towers, and golf driving ranges. In many of these cases, area residents area concerned about the level of contrast of these new developments and the views they block or detract from. These same concerns have been expressed for a number of proposed projects on BLM managed lands, and will likely continue to be issues in the future.

Public Health and Safety

This section profiles the planning area's propensity for increasing conflicts arising from a wide range of activities. These include shooting, illegal dumping, the presence of hazardous materials, vehicle/livestock collisions, and fire potential in the wildland urban interface.

In many portions of BLM managed lands in the planning area, unmanaged vehicle use and uncontrolled dumping have degraded visual quality for recreationists and nearby homeowners. Concentrated areas of public land dumping occur outside Redmond, Bend, La Pine, Prineville and Terrebonne/Crooked River Ranch. Public land dumping is in part a response to continued increases in dumping fees for refrigerators, appliances, and automobile/truck tires. Particular problem areas include the following BLM managed lands (See Map 15-Illegal Dumping Areas):

1. south of Prineville along Millican Road;
2. south of Prineville at Juniper Canyon;
3. south of Prineville off Remington Road;
4. south of O'neil Highway and west of the North Unit Canal
5. east of Redmond and west of the North Unit Canal;
6. east of Redmond at Antler and 19th Avenue;
7. south of Redmond along Airport Avenue;
8. northeast of Bend off Powell Butte Highway;
9. immediately north and south of Alfalfa Market Road;
10. Barr Road in the southern portion of Cline Buttes
11. lands at the State Highway 126/Barr Road/Buckhorn Road intersection;
12. Steamboat Rock area west of Terrebonne and South of Crooked River Ranch; and
13. numerous locations in La Pine.

Over the past decade, the increase in the number of subdivisions located adjacent to BLM managed lands has increased the number of target shooters and the number of complaints about unsafe target shooting practices. Although target shooting occurs throughout the planning area, many specific areas have been identified through complaints of adjacent landowners. In other cases, shooting areas have become a problem due to the amount of debris left over by target shooters, including shell casings, plywood, paper targets, bottles, metal debris, and miscellaneous trash. While many target shooters are highly conscientious about leaving no trace, the intense use of an area for target shooting often leaves the area strewn with garbage and with juniper trees cut in half by repeated gunfire.

Areas where resource or social conflicts occur include an area south of Prineville and east of the Millican Road, an area along Lower Bridge Road south of Crooked River Ranch, the powerline corridor near the Redmond sewage treatment plant, areas near Alfalfa Market Road, and BLM managed lands immediately east of Bend along U.S. Highway 20.

Hazardous material safety issues include the threat from vehicle accidents and spills, as well as dispersed illegal dumping which occurs throughout the planning area. The most common types of incidents are related to vehicle accidents along major federal or State Highway ROWs. These have included both minor and major fuel spills. These pose a higher risk in the La Pine area due to the very shallow ground water.

Illegal dumping has resulted in the BLM conducting hazardous waste responses to paints, used fuel/oil, asbestos, batteries (lead), medical wastes (needles and sharps), wire burns and meth lab waste within the planning area. These have averaged about 2 per year, but as populations increase they are also expected to increase. When responding to illegally dumped domestic or commercial trash, trained BLM staff are required to screen it for possible hazardous materials before pickup and disposal. The large amount of dumped material and the difficulty in accomplishing this screening has resulted in a widespread public safety hazard. The illegal dumping is almost always present where ever there are numerous dirt access roads and it is relative easy to drive to behind a few juniper trees or rock outcrops (out of sight) and dump debris. These sites are usually within a quarter to one-

half mile off the pavement, and range from La Pine to Crooked River Ranch and from Prineville to Sisters.

Livestock/vehicle collisions occasionally occur on busy roads on public and private land within the planning area. Sometimes these roads are unfenced and within allotment boundaries; other times livestock grazing on public land reach these roads after someone has left a gate open or cut a fence. Problems also occur when fences on public or private land are inadequately maintained. Grazing permittees spend considerable time checking and closing gates and repairing vandalized fences, particularly in areas close to cities, subdivisions, and popular recreation areas. The BLM often receives requests for increased patrols to prevent vandalism (cut fences and gates left open, or allow construction of new fences (or reconstruction of old fences) to prevent livestock from straying across busy roads.

Some of the more popular rockhounding areas currently have steep and unstable slopes and pits where materials have been excavated. Although no formal assessments have been conducted, these areas may contain hazardous sites where collectors may be harmed by rockfall or slides.

Communities in the Upper Deschutes Planning Area have been steadily expanding over the past decades. The population in Deschutes County increased by 53.9% between 1990 and 2000, according to the most recent census data. The populations in Jefferson and Crook Counties has also expanded rapidly, at 39.0% and 35.9% respectively, and new neighborhoods and individual homes are appearing in lands previously considered wild. That area where the edge of urban development meets the edge of federally managed wildlands is termed the wildland urban interface. This tremendous expansion of the wildland urban interface increases the problem of communities at risk from wildland fire dramatically, as well as adding a source of ignitions that can move onto the public lands.

Homes built in the interface zone are frequently considered more valuable due to the scenic quality and convenient recreation opportunities provided by the adjacent wildlands. It has become clear in the western United States that homes in this zone can also be at increased risk of damage or loss to wildland fire. Several large fires in the past 20 years have threatened or destroyed homes in or near the Upper Deschutes planning area. Most notably, the Awbrey Hall Fire of 1990 and the Skeleton Fire of 1996 were both fast moving, destructive wildland fires. Every community in the planning area has felt the threat of wildland fire at some time in the recent past.

A list of communities with the highest risk of wildland fire impacts has been compiled for the entire United States in concert with the National Fire Plan of 2000. Several communities near or within the Upper Deschutes planning area are on this list.

Central Oregon, with its combination of hot, dry summer weather and routine lightning storms has frequent fire ignitions. These fires once regulated vegetative growth, biomass accumulation, and species composition, and were extremely important in maintaining well-functioning ecosystems. With the human inhabitants in the area today, those frequent ignitions have become a threat where they occur near the population centers.

In the past 20 years, there have been a total of 747 fires involving BLM fire suppression within the planning area. Of those fires, 23% were of human origin, and 77% were lightning caused. Considering the two planning area blocks separately, there are some interesting differences. In the La Pine area, which has the most fuel and possibly the greatest potential for fire involving homes in the wildland urban interface, there have been 62 fires within the planning area boundary in that 20 year period. Only 12 of these were lightning fires, the other 50 were human caused. The largest fire within the planning area in the past 20 years was the 120 acre Pine Forest Fire in the spring of 2001. Many large fires have burned near

La Pine on private or National Forest lands, and there is a potential for large fire initiation and spread in this area. Further analysis of risk and opportunities to reduce that risk will be done in conjunction with this planning effort.

The larger northern portion of the planning area has had 685 fires in the past 20 years. Only 19% of those were human caused, the other 81% caused by lightning.

Many subdivisions in the planning area have designated emergency exit routes, to allow evacuation during catastrophic wildland fires. In some cases these roads are unimproved roads through BLM managed lands that do not have any Rights-of-Way associated with them. In most cases, there has been no coordination between subdivisions, the counties, and BLM to identify these roads and maintain them to a standard necessary for emergency exit. In some cases, these ad hoc emergency exit routes connect to paved, public roads at unsafe locations. The emergency exit linking from 81st Avenue at Crooked River Ranch to Lower Bridge Road is an example of an emergency exit that is not adequately maintained, signed, or aligned.

Map 6 - Wildfire History and Wildland Urban Interface shows BLM managed lands adjacent to population centers that may be considered a fuels risk.

Chapter 4
Existing Management Direction

Introduction

This section describes the current management direction provided by the existing Resource Management Plans (RMPs) and associated NEPA documents applicable to the Upper Deschutes planning area. Management direction from the existing RMPs that is still valid will be carried forward in the Upper Deschutes RMP/EIS as direction common to all alternatives. Those management directions/actions from the existing RMPs that are valid but may need some modification in wording or intent will be incorporated into the alternatives of the Upper Deschutes RMP/EIS.

In addition to the direction in the RMPs and other documents described in this chapter, various resource programs are directed by laws (e.g., Clean Water Act and Endangered Species Act) and by BLM policy described in manuals and handbooks. There is some mention of these laws and policy below, but the full list of these legal mandates is found in Chapter 2 of this AMS.

Air Quality

The Brothers/La Pine and Two Rivers RMPs provide direction for maintaining air quality under the Fire Management, Minerals, and Forestland sections. The RMP acknowledges the need to comply with state and federal law.

The Clean Air Act in 1967 and amendments to the Act in 1972, 1977, and 1990 give the state the responsibility for the administration and enforcement of air quality and visibility standards. To meet these objectives the State of Oregon has developed and administered the State Implementation Plan (SIP). The SIP specifies a 22 percent reduction in emission levels statewide from the baseline period of 1982-1984 by the end of year 2001, with a review in 1990 to determine whether "reasonable progress" had been made. The SIP, the State Visibility Protection Plan, adopted in 1986, substantially constrains prescribed burning from July 4 through Labor Day in order to reduce visibility impairment in Class I areas.

The Oregon Smoke Management Plan (OSMP), companion to the SIP, classifies certain areas as "designated areas" and "smoke sensitive" areas. The OSMP requires that prescribed burning, primarily slash burning, be done only when atmospheric conditions prevent smoke from temporarily degrading the air quality of these areas.

The portion of the planning area in Jefferson, Klamath, and Crook Counties is not covered by the Oregon Smoke Management plan. All management activities done in this area voluntarily comply with the plan, and fire and fuels programs are planned and executed to minimize impacts to air quality. Prescribed burning in Oregon and Washington has never resulted in a violation of NAAQS (the National Ambient Air Quality Standard).

The EPA has published an Interim Policy on Fire, which integrates two public policy goals, 1) to allow fire to function, as nearly as possible, in its natural role in maintaining healthy wildland ecosystems, and 2) to protect public health and welfare by mitigating the impacts of air pollutant emissions on air quality and visibility. EPA's Natural Events Policy addresses events that lead to violations of NAAQS. If natural events cause violations of the PM-10 air quality standards, States will be required to develop and implement a natural events action plan, which will include the following components:

- -States will be responsible for documenting when and to what extent natural events affect PM-10 concentrations.
- - States will 1) educate the public about the harmful effects of particulate matter, 2) notify the public when the air quality is affected by natural events, 3) minimize personal

exposure to high levels of PM-10, and 4) reduce particulate matter levels during natural events.

- PM-10 concentrations in areas affected by forest fires can be helped by prohibiting other open burning activities during the event.

Water Quantity and Quality

Brothers/La Pine RMP guidance provides little specific direction for addressing water quality or quantity, but does state that water sources necessary to meet BLM program objectives will be developed and filed on according to State and Federal laws and regulations. Additionally, in the Brothers portion, livestock exclusion or restricted use along 46 miles of stream, 55 miles of stream stabilization, 620 stream structures and 15 acres of debris removal were actions to be taken to maintain or improve water quality. Water quality is indirectly addressed through management and desired condition of riparian vegetation (see the Vegetation section of this Chapter).

The Environmental Protection Agency (EPA) has delegated authority to implement the "Federal Water Pollution Control Act of 1972" (Public Law 92-500) and amendments, and the 1977 "Clean Water Act" (CWA) in Oregon to the Oregon Department of Environmental Quality (ODEQ). As specified in the Act and subsequent amendments, Federal agencies are responsible for water quality on land they manage, as described in memorandums of understanding (MOUs) with State environmental agencies. These MOUs require Federal agencies to meet water quality standards, monitor activities to assure that they meet standards, report results to the State of Oregon, and meet periodically to recertify Best Management Practices (BMPs). Water quality BMPs are those practices that are the most effective, practicable, and economic means of preventing or reducing the amount of pollution from nonpoint sources, which are defined as sources that cannot be pinpointed but that can be best controlled by proper soil, water, and land management practices.

Through a memorandum of agreement (MOA) (BLM 1990), the ODEQ assists the BLM in developing or updating BMPs and evaluating practices that protect rivers and lakes. The BLM is an ODEQ designated management agency charged with implementing and enforcing natural resource management programs for the protection of water quality on Federal land under its jurisdiction. The BLM Oregon State Office is initiating a revision of the MOA to update and reaffirm the designation of the BLM as a Designated Management Agency, and establish a process for Federal and State coordination over issues relating to non-point source water quality management and water quality compliance.

As specified in the "Federal Water Pollution Control Act," water quality involves all attributes that affect existing and designated uses of a body of water. Included are human uses such as recreation, hydropower, water supply, and maintenance of fisheries and riparian habitats. The primary cause of water quality degradation on public land is pollution from nonpoint sources. High sediment and turbidity levels and elevated temperatures are the primary water quality problems stemming from nonpoint sources.

As part of fulfilling its requirements with the EPA under section 303(d) of the CWA, the State of Oregon has updated its list of "water quality limited" waters. The current (1998) listing of waters that do not meet the State's water quality standards is based upon actual evidence of violation (OAR 340-41). It is a State's responsibility to develop their respective 303(d) list and establish Total Maximum Daily Loads (TMDL) for the parameter(s) causing waterbody impairment (that is, a violation of State or tribal water quality standards and failure to support beneficial uses). The ODEQ plans to complete TMDLs for the Little Deschutes and Upper Deschutes Sub-Basins by their target date of 2002, and complete TMDLs for sub-basins within the Crooked River system by 2004. In most cases, TMDLs will not prescribe what specifically must be done to meet allocated loads.

The development and implementation of Water Quality Restoration Plans (WQRPs) provide the specific actions by which the Forest Service and BLM will meet TMDL requirements on lands under their jurisdiction. The protocol for developing WQRPs is outlined in "Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Streams" (USDI, USDA, & EPA, 1999). The development and implementation of a WQRP is the primary mechanism to address and restore impaired waters on Forest Service or BLM administered lands and to support State development and implementation of TMDLs on those lands. Development and implementation of WQRPs will meet Forest Service and BLM responsibilities for listed waters, allow management activities to proceed that complement a WQRP, and ensure that management activities lead to attainment of water quality standards and beneficial uses.

Oregon has adopted an antidegradation standard (OAR 340-41-026, implemented through OAR 340-41-120 through 340-41-962) that incorporates Federal policies. In general, the Federal policies and State standard require that water quality be maintained for beneficial uses. Exceptions can be made through approval of the ODEQ, but in no instance are waters allowed to violate water quality standards or fall below the level required for beneficial uses. The same also applies to maintaining water quality for outstanding resource values as identified by ODEQ; however, no such values have been identified.

BLM management that affects water quality is also governed by other laws and regulations. For example, the BLM obtains permits from the EPA through the Oregon Division of State Lands (ODSL) and from the Army Corps of Engineers to comply with sections 401, 402, and 404 of the CWA. These sections cover project work (particularly dredge or fill activities) that may affect surface waters, including wetlands. The BLM also addresses water quality as it affects habitat for Federally listed species under section 7 of the ESA.

Water Rights

Brothers/La Pine RMP guidance for water rights is limited to providing that water sources necessary to meet BLM program objectives will be developed and filed on according to State and Federal laws and regulations. Under agricultural use of Public Land the RMP notes, "Private appropriation of water as it relates to agricultural use on adjacent public lands will be coordinated through the Oregon department of Fish and Wildlife, the Oregon Water Resources Board, and the Oregon State Parks and Recreation Division of the Department of Transportation to ensure that fish, wildlife and recreational values are not affected."

In Oregon, all water is publicly owned. Permits for water use from any source must be obtained from the Oregon Water Resources Department, with some exceptions. Laws pertaining to the use of surface water and groundwater are based on the principle of prior appropriation ("first in time, first in right") and limited to the quantity of water needed to satisfy the specified beneficial use without waste. That is, the first person to obtain a water right will be the senior holder on a particular stream and has priority over all junior claims in times of water shortage.

The State of Oregon recognizes instream water rights for the public benefit to maintain sufficient flows to protect recreation, fish, wildlife, and other river-related resources. Instream water rights are applied for by the DEQ, the Department of Parks and Recreation, and the Department of Fish and Wildlife to the state's Water Resource Commission. The priority date for instream water rights is the date the application is submitted to the Water Resources Department.

Two types of water rights exist on the public lands: federal water rights, which consist of reserved water rights that originate under Federal law; and water rights which are acquired pursuant to State water law. Federal reserved water rights are a judicial creation; they are derived from Federal, not State, law. The doctrine of reserved rights holds: "That when the

Federal Government withdraws its lands from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation. In doing so, the United States acquires a reserved water right in unappropriated water which vests on the date of the reservation and is superior to the rights of future appropriators" (*Cappaert v. United States*, 1976). Thus, on withdrawn lands the reserved rights doctrine allows the federal government to remove water from availability for appropriation under state law. This doctrine also holds true for lands created for Indian reservations as demonstrated in *Winters v. United States,* decided in 1908. The principles of the *Winters* doctrine, also known as the "implied reservation of water" doctrine, affirms that tribes are to have enough water to satisfy the reservation's purpose, both for present and future needs (Pevar, 1992).

The amount of water that the United States can claim under reserved rights depends on the purposes for which the lands were reserved. The reserved right must relate to the original primary purposes for which the land was withdrawn, and it is limited to the amount of water necessary for the reservation's specific purposes. The priority date for a federal reserved water right for the purposes of determining seniority relative to other rights obtained under State or Federal law is the date when a reservation is established–the date of the statute, executive order, agreement, or treaty setting aside the land. Water rights already existing on a stream when a reservation is established are superior to the reserved rights of the Federal Government; federal reserved rights are superior only to subsequently established rights. This greatly limits the Federal Government's rights for newer reservations on heavily or fully appropriated streams, but it does provide protection against future uses.

Springs in the planning area can qualify as a Public Water Reserve No. 107 if they meet the criteria for that reservation. In 1926, President Calvin Coolidge signed an executive order entitled "Public Water Reserve No. 107". The order states that "every smallest legal subdivision of public land surveys which is vacant, unappropriated, unreserved public land and contains a spring or water hole, and all land within one quarter of a mile of every spring or water hole... be...withdrawn from settlement, location, sale or entry, and reserved for public use...".

Public Water Reserve 107 was a general withdrawal of public lands made in response to the fact that, prior to that time, effective control over vast areas of the public domain could be gained merely by securing patents to small tracts surrounding available water sources for a given area. The 1926 reservation was designed to prevent this private monopolization of water on the public domain by withdrawing land and maintaining water open and free for the public use.

With the enactment of FLPMA in 1976, Congress limited the authority of the Executive Branch to make future withdrawals of land from the public domain. However, FLPMA stipulated that withdrawals and reservations existing at the time of its enactment shall remain in effect. Therefore, even today the BLM can assert its PWR 107 claims and reserve and withdraw certain springs and waterholes from the public domain. The priority date of this reservation is April 17, 1926, the day the Executive Order was signed.

Because the 1926 Executive Order did not provide for individual land descriptions, it was left to the Secretary of the Interior to identify land and water areas subject to the order and note the land office records accordingly. Therefore, all springs and water holes that qualify as a Public Water Reserve No. 107 that existed as of the date of the Executive Order April 26, 1926 have been reserved even though they have not been recorded on a Master Title Plat or other document. However, Public Water Reserve No. 107 does not apply to lands acquired after April 17, 1926. To date, no determination of which springs in the planning area qualify as a Public Water Reserve No. 107 has been made.

Current BLM and Department of Interior policy is to use the State's instream flow water right process to preserve flow-dependent values for any stream designated as a National Wild and Scenic River. The "National Wild and Scenic Rivers Act" (NWSRA) (Public Law 90-542) specifically reserved the minimum quantity of water necessary to maintain the values for which the river was designated. A federal reserved water right is authorized by the Act, and the priority dates for each of the river segments is the date of designation. A federal reserved water right would only be exercised if the state's appropriative instream water rights process is inadequate to protect the designated values of the river. Current policy of the Department of the Interior (DOI) provides latitude to cooperate with Oregon natural resource agencies to achieve resource protection objectives prior to exercising a reserved water right. This in no way abrogates the federal reserved water right.

Soils

The Brothers/La Pine RMP provides that inventory and evaluation of soils continue and that public lands be managed to maintain productivity and minimize erosion. Corrective actions will take place where practicable, to resolve erosive conditions. Surface disturbance at all project sites will be held to a minimum. Disturbed soil will be rehabilitated to blend into the surrounding soil surface and reseeded as needed with a mixture of grasses, forbs, and browse as applicable to replace ground cover and reduce soil loss from wind and water erosion. The RMP also provides for watershed rehabilitation in areas where deterioration of watershed values due to accelerated erosion and runoff has been significant. Measures designed to protect soils is integral to most resource management programs and projects identified in the RMP and project NEPA documents. Further guidance for protection of soils and long-term watershed enhancement is found in the Livestock Grazing, Forestland, Woodlands, Minerals, Recreation, and Fire Management sections of the Brothers/La Pine RMP.

Vegetation

Forestlands and Woodlands

Direction in the Brothers/La Pine RMP for management of commercial forest in the La Pine area focuses on prompt treatment of the mountain pine beetle epidemic including the following four primary objectives: 1) reduction of extreme fire hazard, 2) salvage of dead and dying timber, 3) successful reforestation, and 4) increasing subsequent growth of commercial tree species. The RMP provides that up to 14 MMBF will be salvaged annually from 1,500 to 2,000 acres. Once the beetle-killed mature and over-mature stands have been salvaged, no commercial timber harvest, except for periodic salvage, will be expected to occur for the next 30 to 40 years. At that time, timber harvest will again be based on the productive capacity of the land. Salvage of dead timber in the La Pine area is substantially complete. A total of 200 acres in the La Pine area will be managed for posts, poles, and commercial firewood. Allowable annual harvest of firewood from the La Pine area is 2,500 cords.

In the northern area, RMP direction for commercial forest management provides for a potential annual sustainable harvest of 79 MBF from 977 acres. No harvest has occurred in the northern area in the last 20 years. Juniper woodlands totaling 132,969 acres in the northern area will be managed for posts, poles, and firewood. Allowable annual harvest of firewood is 1700 cords.

Other existing RMP management direction provides specific guidelines for harvest unit design, silvicultural prescriptions, logging systems, road construction/maintenance, slash disposal, prescribed fire, and protection of soils, meadows, streams, riparian areas, wildlife habitat, Threatened and Endangered Species, and scenic values. All actions require interdisciplinary site-specific analysis.

The BLM Timber Management FEIS (1976), along with the legal authorities described in Chapter 2, provides the framework within which the BLM forest management program is developed. The timber management program is only one component of the forest management program which is carried out in accordance with laws, statutes, and regulations pertaining to the lands under the administration of the BLM. The basic guidance set forth in these authorities requires that forest lands be managed under the principles of multiple-use, sustained yield, and environmental quality.

Two patents issued to the State of Oregon pursuant to R&PP applications, Oregon 015553 and Oregon 016896 provide for BLM management of the vegetative resource on 1,768 acres within what is now the La Pine State Park. The R&PP applications read in part: "Reserving also to the United States all present and future vegetative resources, together with the right, consistent with, the recreational objectives of this area, to administer, manage, and remove said resources, to retain the revenues from the management and sale of said resources, and to have unlimited right of ingress, egress, and use of the surface for said purposes."

A few current existing project environmental assessments and categorical exclusions provide guidance on site-specific management of firewood, special forest products, and utility corridor ROW vegetation. These project documents provide for where, when, and how much vegetative harvest or treatment may occur in specific locations.

The Brothers/La Pine RMP also prescribed juniper control (cut and/or burn no more than 60 percent in any one area, in a mosaic), seeding (primarily crested wheatgrass), and shrub control to improve ecological condition of rangelands. There is no specific management direction in the RMP regarding management of old-growth juniper woodlands. See Livestock Grazing section in this chapter for additional description of existing management of rangelands.

Riparian

The Brothers La Pine and Two Rivers RMPs provide direction for continued protection and management of stream riparian areas to provide full vegetative potential. This is to be accomplished by grazing management and fence construction. Where fencing is not feasible, livestock use is to be managed to achieve 60 percent of vegetative potential within 20 years. Riparian vegetation is expected to improve on 75 percent of the stream riparian habitats. The remaining acres are expected to be maintained in current good to excellent ecological status.

Reservoir riparian areas are expected to improve through fencing on seven percent of the area and to be maintained or slightly improved through grazing management on the remaining 93 percent.

In the La Pine portion, management techniques will maintain or improve current good to excellent streambank stability and vegetative condition on the 10 acres of riparian vegetation along 1.5 stream miles on BLM-managed lands.

Special Status Plants

The Brothers/La Pine RMP focuses on habitat improvement. The RMP permits no actions that would jeopardize the continued existence of any federally listed Threatened or Endangered Species. The RMP requires consulting with ODFW and USFWS if projects may affect habitat for Threatened or Endangered species. BLM policy is to monitor and maintain or improve habitat for Threatened or Endangered Species during project planning and implementation. Proposed project areas are subject to botanical inventory for special status

species prior to project initiation. Federally listed, proposed or candidate T&E plant species are currently not known to occur or suspected within the planning area.

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended, directs BLM to 1) conserve Threatened and Endangered Species and the ecosystems upon which they depend, and 2) not contribute to the need to list a species.

The Federal Land Policy and Management Act (FLPMA) of October 21, 1976 (43 U.S.C. 1701, Section 102 (a)(8)) directs that the public lands will be managed in a manner that will protect the quality of scientific and ecological values.

The following guidance is provided in BLM Manual 6840 for Special Status Species Management (1/19/01). For federally listed, proposed and candidate Threatened and Endangered Species, BLM policy is to conserve the species and the ecosystems upon which they depend, ensure that all actions authorized, funded or carried out by BLM are in compliance with the ESA, cooperate with the USFWS in planning and providing for the recovery of listed species, retain in Federal ownership all habitat essential for the survival or recovery of any T&E species, and consult/confer with USFWS during development and implementation of management plans to conserve species and their habitats. The types of actions and level of interaction with USFWS are dependent on the status of the species in question.

For state listed species, BLM policy is to carry out management for the conservation of such species. State laws protecting these species apply to all BLM programs and actions to the extent they are consistent with FLPMA.

The Oregon/Washington Special Status Species Policy, IM No. OR-91-57 (11/5/90, as amended by IM No. OR-91-57 change 1, issued 8/5/91) defines and further clarifies the management of sensitive species by assigning these species as either Bureau Sensitive or Assessment. Bureau Sensitive Species are protected, managed and conserved in the same manner as Candidate Species. Assessment species must be addressed in any planning or NEPA documentation and are protected when possible. For sensitive species, BLM is to work with the Oregon Department of Agriculture and the State Natural Heritage Program to determine which species should be designated as such. The minimal level of protection will be the level of protection provided to candidate species, which includes the following actions: considering these species in land use plans; developing plans, strategies and assessments to conserve these species and their habitats; ensuring BLM actions are consistent with objectives for managing these species; and monitoring to determine if objectives are being met. All special status plants currently known or suspected in the planning area are managed as Bureau Sensitive, with two of the species additionally listed as Threatened in Oregon.

Further direction is provided for one species, the pumice grapefern, through a multi-agency Conservation Strategy with the BLM and Forest Service as partners. The strategy calls for "protection" of all known populations for two years (beginning 2001). Protection is defined as only allowing those activities which would protect or enhance the pumice grapefern habitat. At the end of two years, determinations would be made as to which populations would continue to be protected and which populations would be "managed", i.e., other activities, not necessarily compatible with the grapefern, could be allowed. The two year time frame coincides with the conclusion of a "disturbance ecology" study of the grapefern,

a five-year challenge cost share project with Oregon Department of Agriculture, of which BLM is a partner along with the Forest Service.

Noxious Weeds

The Brothers/La Pine RMP provides for control of noxious weeds on a site-specific basis and in coordination with other government agencies and adjacent land owners. Management must also be consistent with the documents listed below.

Currently the BLM Prineville District operates under the noxious weed management protocols set forth in the District Environmental Assessment (EA) titled Prineville District Integrated Weed Management (EA# OR-053-3-062), which was based on, and tiered to the following documents: Vegetation Treatment on BLM Lands in Thirteen Western States FEIS and ROD (1991); Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD (1987); and the Integrated Noxious Weed Control; and the Northwest Noxious Weed Control FEIS (1985) and ROD (1986).

Weed prevention and control practices prescribed in the Prineville District EA includes a full spectrum of tools using integrated weed management concepts. The District weed management program contains four key components: detection, prevention, control, and rehabilitation. Detection is normally done using ground or remote sensing techniques. Prevention activities focus on public education and awareness as well as project design guidelines and mitigation measures. Control measures include manual, mechanical, chemical and biological methods. A more detailed description of the District's weed management program may be found in EA# OR-053-3-062, available at the Prineville District Office.

The Carlson-Foley Act (PL 90-583), FLPMA (1976) and other federal, as well as state and county laws (a more complete list is in the District's Integrated Weed Management EA), establish legal guidance and responsibility for the management of weeds on federal lands. The BLM Prineville District coordinates weed prevention, detection, and control efforts with the local County Weed Board, ODA, ODOT, Ochoco and Deschutes National Forests, BOR, local Soil and Water Conservation Districts, as well as private land owners and neighborhood community groups.

Wildlife

The Brothers/LaPine RMP provides the framework for existing wildlife management through broad habitat goals and requires protection of critical habitats for Threatened, Endangered (T&E) and Sensitive species, raptor nest sites, big game winter ranges, and sage grouse habitat. Biological Evaluations (BEs) are written prior to any actions that affect BLM-managed lands. The BE identifies all T&E and Sensitive species known to occur or have potential to occur in the area surrounding proposed projects, and addresses the potential impacts of the projects or actions on species.

The Brothers/La Pine RMP relies on vegetation management to provide habitat to meet ODFW population goals, based on numbers estimated in 1982. Vegetation habitat management activities include livestock grazing, juniper and pine thinning, shrub control, habitat protection, riparian and wetland protection, prescribed burning, and fire suppression. In general, grazing is to be managed to allow available forage for wildlife, and projects should be designed to allow for wildlife migration, escapement from water troughs, and should not affect areas of critical habitat. Vegetation manipulation guidelines in the RMP state a variety of allowable activities. Sagebrush control is to be done in irregular patterns. Seeding will be a mix of crested wheatgrass and other species added as a benefit to wildlife. Juniper control seeks to provide specific vegetation compositions as stated on page 89 of the Brothers/La

Pine RMP. General guidelines for habitat management address seasonal restrictions, habitat maintenance, timber sale design to allow for migration corridors, and riparian habitat protection from grazing.

The Brothers/La Pine RMP outlines a general approach for management of mule deer, a locally abundant species. Special designations for "crucial" habitat areas were assigned in the RMP (see Map 8-Deer Habitat and Winter Range). Deer migration routes were designated in the La Pine area only. General considerations for available forage, vegetation manipulations, fence specifications, and water developments were made in the RMP. In 1990, ODFW set management objectives for mule deer and elk throughout the state. In 1994, BLM and ODFW entered into a MOU in which BLM agreed to help ODFW meet the management objectives. The RMP committed BLM to provide forage to help ODFW meet an increased population goal of 27 percent higher than the numbers reported for 1982.

The Brothers/La Pine RMP states that, in 1982, the estimated number of elk was 70 animals in the planning area. No guidelines or recommendation were described for managing elk. BLM committed to providing forage to help ODFW meet an increased population goal of 71 percent higher than the numbers reported for 1982. No special designations, migration corridors, or important habitat areas were identified in the RMP. Only general considerations for available forage, vegetation manipulations, fence specifications, and water developments were made in the RMP.

The current RMP outlines BLM's general approach for management of antelope. BLM committed to helping ODFW meet an increased population goal of a 23 percent increase above the numbers reported for 1982. Special designations of "crucial" winter ranges were assigned in the RMP. Migration routes were not designated anywhere in the planning area. The RMP considered only general recommendations relating to the amount of available forage, vegetation manipulations, fence specifications, and water developments.

Since the 1989 RMP, a limited amount of new information has been gathered about antelope in the new planning area. Habitat use areas, movements, winter areas, population size, and impacts on local populations from development of private lands has not been fully explored or identified. There are several known antelope herds and special habitat use areas that were not identified in the Brothers/La Pine RMP.

Except for recommendations to protect sage grouse habitat, upland game birds and their habitats were not discussed in the Brothers/La Pine RMP. Provisions made for sage grouse include management guidelines for protecting nesting areas around leks, limiting vegetation manipulation in spring, summer, and fall ranges, and some considerations for management of winter areas.

Sage grouse numbers have been declining throughout the western states for several decades. Page 97 of the RMP states that "Habitat management plans will be written for high priority wildlife habitats. These plans will detail how those habitats will be improved or maintained. Plans for sage grouse and bald eagles are expected to be written during this planning cycle." No plans have been developed for either of these species to date.

In 1999, the BLM Oregon State Office directed a committee to write guidelines for management of sage grouse and their habitat. The guidelines were finalized in April 2000 with the document entitled "Management Guidelines for Greater Sage-grouse and Sagebrush-steppe Ecosystems." These management guidelines are intended to promote the conservation of greater sage-grouse and their sagebrush habitats on Oregon and Washington public lands administered by the BLM. These guidelines establish interim policy while BLM completes the long-term Sage Grouse/Sagebrush-Steppe Conservation Assessment and Plan. These guidelines are tied to the life history of sage-grouse and respond to the best science available on the management of sage-grouse. They are intended to preserve options, but not constrain strategies being explored for long-term conservation.

Two other policies also direct habitat management guidelines:

1. BLM National Policy on Special Status Species (BLM 6840 Manual) states: "BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate [and sensitive] species and their habitats and shall ensure that actions authorized, funded, or carried out, do not contribute to the need to list any of these species as Threatened/Endangered."
2. The Standards for Rangeland Health and Guidelines for Grazing Management (standard 5) states: "Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and land form." The BLM grazing regulations (43 CFR 4180.2 [c]) state: "The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform with the guidelines that are made effective under this section."

The current RMP states guidance for managing T&E species. The bald eagle is the only species with specific direction for management through the Bald Eagle Recovery Plan. The RMP stated a need to develop a habitat management plan for the eagle. Page 97 provides only brief guidance on the protection of other raptor species. The RMP only mentions that seasonal restrictions will be applied to mitigate the impacts of human activities on important seasonal wildlife habitat area (i.e. raptor nests).

At least two laws were not brought forward in the RMP regarding the management and required protection of raptors and raptor habitat. The Golden Eagle Act and the Migratory Bird Treaty Act both require BLM to protect known raptor areas, such as roosting, nesting, foraging, and temporary use areas.

Other ongoing management includes a cooperative guzzler maintenance program. These water sources are critical to many wildlife species where natural water sources are limited. The maintenance is achieved by challenge cost-share funds between the BLM and ODFW, and also involves volunteer groups, such as the Oregon Hunters Association.

Unless animals were listed as T&E or Sensitive, the Brothers/LaPine RMP did not make specific management provisions for wildlife such as amphibians, reptiles, small mammals, neo-tropical migrants, fur-bearers, and insects or mollusks. The current RMP does not address predators such as mountain lion or coyotes.

During the past decade a number of actions have been implemented to protect, maintain, or enhance specific areas of habitat for wildlife. Special closure areas have been put in place to protect golden eagles and prairie falcon nests. These closures restrict human uses surrounding the nesting areas from January to August for eagles and March to August for prairie falcons.

In addition, implementation of the consent judgement resulting from litigation related to the Millican OHV Management Plan, has placed more than 200,000 acres of BLM-managed land under a motorized vehicle restriction, which has reduced road and trail densities to no more than 2.0 miles/mile^2. The consent judgement also provides seasonal restrictions on OHVs to further protect important habitats for big game and sage grouse. These restrictions are outlined in the Recreation section in this chapter.

The Oregon State Office of the BLM works in coordination with ODFW by means of a Memorandum of Understanding (MOU) between the agencies. This MOU was updated and signed in May 2001. The purpose of this MOU is to promote cooperative agency management of fish and wildlife resources on BLM-administered lands in the State of Oregon. The BLM is authorized and responsible by acts of Congress and by regulations issued by the Secretary of the Interior to manage, protect, and develop the resources of the public lands.

Management Authorities include:

- Taylor Grazing Act of 1934, as amended (P.L. 73-4820)
- The Fish and Wildlife Coordination Act, as amended (P.L. 86-642)
- Sikes Act of 1960, as amended, (P.L. 93-452, P.L. 95-420)
- The Wilderness Act of 1964 (P.L. 88-577)
- Public Rangelands Improvement Act (P.L. 95-514)
- Federal Land Policy and Management Act (FLPMA) (P.L. 94-579)
- National Environmental Policy Act (P.L. 91-190)
- Endangered Species Act of 1973, as amended (P.L. 93-205)
- Fish and Wildlife Conservation Act of 1980 (P.L. 96-366)

Ongoing management places a priority on T&E and Sensitive species. Under the Brother/La Pine RMP, management activities in the habitat of listed or candidate T&E or Sensitive species are to be designed specifically to benefit those species through habitat improvement. Before implementing projects that may affect habitat for T&E and Sensitive species, BLM must consult with ODFW and the USFWS through the Biological Assessment (BA) process, then formal consultation would be initiated under Section 7 of the Endangered Species Act (ESA) of 1973.

Under the ESA, all federal agencies, in consultation with the Secretary of the Interior, must take all necessary precautions to ensure that agency actions do not jeopardize federally listed T&E species or destroy or degrade their habitats. Any agency whose action could affect (positively or negatively) the continued existence of a federally listed T&E species must consult with USFWS (see 50 CFR § 17 and 50 CFR § 402). Section 7(A)(1) of the ESA states that "All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of Endangered species and Threatened species listed pursuant to Section 4 of the ESA."

Consultations under the ESA are divided into two categories: formal and informal. In general, no formal consultation is required if the action agency finds, with the USFWS's written concurrence, that the proposed action "may affect, but is not likely to adversely affect" listed species or critical habitat. This finding can be made only if all of the reasonably expected effects of the proposed action will be beneficial, insignificant, or discountable. The action agency must request concurrence in writing from the USFWS for this finding.

Preparation of a BA is required before formal consultation begins and also is required for informal consultation in cases involving major construction activity where listed species or critical habitat are present. Anywhere from a few weeks to more than a year could be required to finalize a BA before it can be submitted to the USFWS as part of the request to initiate formal consultations. Formal consultations involve up to 90 days and an additional 45 days (135 days total) for the USFWS to prepare a Biological Opinion (BO).

A BO is a written statement from the USFWS regarding its opinion and a summary of the information on which the opinion is based, detailing how the agency action affects the species or its critical habitat. The BO provides nondiscretionary "reasonable and prudent" measures that should be implemented in conjunction with a proposed action to avoid or minimize impacts. The USFWS also provides nonbinding conservation recommendations as part of the BO.

In 1989, the bald eagle was the only species in the planning area that required consultation under the Endangered Species Act. The Bald Eagle Recovery Plan required the BLM to write a habitat management plan for the bald eagle. Under the Recovery Plan, Bald Eagle Management Areas were to be identified and management criteria was to be implemented. BLM has not yet established BEMAs, nor has it written the mandated HMP.

Consultation is required to achieve a successful RMP amendment and coordination with ODFW, FWS, NMFS, and others will be necessary for a successful consultation process. Starting in 1999, the Prineville District BLM and the Deschutes and Ochoco National Forests formed a "level one team" to consult on several Threatened and Candidate species through a joint programmatic BA. This BA is updated and submitted annually to the USFWS for concurrence related to proposed and ongoing programs as they pertain to bald eagle, Canada lynx, spotted owl, Oregon spotted frog, bull trout, steelhead, and Chinook salmon. The most recent submission of the programmatic BA was made in April 2001, and concurrence was received in July 2001, and is valid until spring of 2003.

Fisheries

The Brothers/La Pine and Two Rivers RMPs provide direction for management of fish habitat through a combination of pro-active projects and resource management. Whenever possible, livestock grazing management will be used instead of projects to improve fish habitat conditions. Habitat improvement is to be accomplished by seasonal changes in livestock grazing to protect banks and vegetation, and by developing grazing systems to reduce soil erosion. Additional vegetative manipulations will be conducted to improve watershed conditions which will increase late season water availability in streams and reduce sedimentation.

Streams will be monitored to ensure maintenance of water quality and riparian conditions and to evaluate the effectiveness of stream improvement practices. This monitoring includes riparian inventory and photo trend, water quality inventory, biotic condition index, fish census and remote sensing of riparian habitat. The priority in which these streams will be monitored for improvement is based upon characteristics of the fisheries, intensity of management, and available funding.

The Brothers/La Pine and the Two Rivers RMPs provide the follow direction for Threatened and Endangered fish species. Informal and formal consultation with the U.S. Fish and Wildlife Service (USFWS) is to be initiated on all proposed actions which may affect any Federally listed or candidate Threatened or Endangered species. Consultation is to be done in accordance with Section 7 of the Endangered Species Act (ESA), as amended. If a USFWS opinion indicates the project action would likely jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat, the action would be canceled or altered as necessary. The ESA requires consultation with USFWS for any management actions that would have the potential to affect bull trout or its habitat.

The Sustainable Fisheries Act of 1996 amended the Magnuson-Stevenson Fisheries Conservation Act so that Federal land management agencies are required to consult with the National Marine Fisheries Service on activities that may adversely affect "Essential Fish Habitat" (EFH). The proposed designated salmon fishery EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically, accessible to salmon in Washington, Oregon, Idaho, and California with some exemptions. Within the Upper Deschutes Planning Area this would include the portion of the Deschutes River downstream of Steelhead Falls, Squaw Creek, and the Crooked River.

Special Management Areas

Wilderness Study Areas (WSAs)

The Badlands and Steelhead Falls WSAs are managed under the Interim Management Policy and Guidelines (IMP) for Lands Under Wilderness Review (BLM 1995). Section 603(c) of the Federal Land Policy and Management Act states the intent of the IMP:

> "*During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness*. . ." (emphasis added).

This language is referred to as the "nonimpairment" mandate. To meet the nonimpairment mandate, Federal agencies essentially manage WSAs to maintain their wilderness characteristics and to avoid additional changes such as new user created routes.

The Brothers/La Pine RMP was completed prior to the Statewide Oregon Wilderness EIS. The RMP acknowleded that the BLM Interim Management Policy would be followed for areas considered for Wilderness Designation.

The Statewide Oregon Wilderness EIS was completed in December, 1989, and was followed by the Record of Decision in October, 1991 titled "Wilderness Study Report." Two Wilderness Study Areas (Badlands WSA and Steelhead Falls WSA) were evaluated, with the Badlands WSA being recommended suitable for wilderness designation. Steelhead Falls WSA was not recommended suitable for wilderness designation. The Horse Ridge ACEC/RNA (see ACEC section in this chapter) is also known as the Western Juniper Instant Study Area (ISA) which was evaluated for wilderness designation in Volume II of the Wilderness Study Report. It was determined that this ISA did not have wilderness characteristics and, therefore, it was not recommended as being suitable for designation. However, all three areas are managed under BLM's Interim Guidelines for Lands Under Wilderness Review (BLM, 1995), better known as the Interim Management Policy (IMP), until Congress acts on Oregon BLM's wilderness recommendations. Only Congress can designate Wilderness or release areas from further wilderness review. Along with the IMP, management of the Western Juniper ISA is identified in the management plan for the Horse Ridge ACEC/RNA, completed in 1996 (see ACEC section in this chapter).

The total acreage and amount recommended suitable and unsuitable for designation is shown for each WSA in Table 3D. Steelhead Falls and Badlands WSA are shown on Map 9-Special Management Areas. Western Juniper ISA is shown on Map 9 as Horse Ridge ACEC.

In addition to the IMP, there have been various EAs completed for regulatory actions at the Badlands and Steelhead Falls WSAs since the completion of the Brothers/La Pine RMP in 1989. These are discussed below.

Badlands WSA

In 1997, BLM completed an EA and implemented a designated route system in the Badlands WSA, limiting motorized use to approximately 30 miles of routes out of the 58 miles of routes inventoried in the initial wilderness review. In 1999, management of the Badlands WSA was affected by the litigation concerning the Millican Valley OHV Plan (Civil NO. 98-29-ST) and subsequent final consent judgement which described interim travel regulations for inventoried routes within the WSA. The final consent judgement limited vehicle use to Route 8 year-round (approximately 8 miles) and Routes 4, 5, 6, and 7 (approximately 12 miles) seasonally, when motorized use is allowed between May 1 to November 30. The

interim travel regulations for Badlands WSA are shown on Map 9-Special Management Areas. While BLM has closed several access points to motorized vehicles and increased signs and patrols in the Badlands in response to the final consent judgement, some violations of the travel regulations in the Badlands still occurs. Some groups have requested greater restrictions to motorized vehicle use in order to protect Wilderness values.

The discovery of a pair of nesting prairie falcons in 2000 at Badlands Rock resulted in an additional seasonal closure for motorized vehicles on a portion of Route 4, and a seasonal closure for all uses within a 1/4 mile of Badlands Rock. This closure is in effect each year regardless of whether the raptors are present. As a result of these various actions and court judgements, the existing travel management policy for the Badlands WSA is as shown in Map 10-Badlands Travel Management Plan.

Route or area closures are posted with signs in the Badlands WSA. However, violations of route closures occur from motorized vehicle use, and some violations of the area closure around Badlands Rock occurs from both motorized and non-motorized users. The WSA has been promoted through publication of numerous newspaper and magazine articles, and the popularity of the area has increased, making successful management of this area by BLM more difficult.

Steelhead Falls WSA

As a result of unmanaged and increasing visitation and vehicle traffic at the Steelhead Falls area (River Road Access) and Folley Waters area (Folley Waters and Steelhead Falls Drive access), the BLM prepared an EA in 1997. As a result of this EA, vehicle access into the WSA at Folley Waters Road was closed and a primitive camping and day use area/trailhead was created outside the WSA at the end of River Road. Management of access points into the Steelhead Falls WSA remains a problem. There are numerous access points into the WSA from roads within Crooked River Ranch, including many locations of longstanding pedestrian or equestrian access across undeveloped private lands. Many of these access points are being blocked by new home construction, and as both Crooked River Ranch and the Bend-Redmond area population grows, more people are seeking access to the Steelhead Falls WSA, leading to parking and access problems at many primitive, undeveloped access points.

With the increased popularity of both WSA's, there has also been a corresponding increase in the number of requests for Special Recreation Permits (SRPs) or 43 CFR 2920 Permits authorizing commercial activities in the Badlands WSA (mostly educational tours or classes under SRPs), and Steelhead Falls WSA (mostly guided trail rides under SRPs or film permits under 43 CFR 2920. To date, no SRPs have been issued for commercial uses in either WSA.

Wild and Scenic Rivers and State Scenic Waterways

There are four designated portions of Wild and Scenic Rivers within the planning area. They include 20 miles of the Middle Deschutes River from Odin Falls to Lake Billy Chinook, 9.8 miles of the Lower Crooked River from the National Grasslands boundary near Ogden Wayside to river mile 8, eight miles of the Lower Crooked River Chimney Rock Segment between Bowman Dam and State Route 27 mile marker 12, and approximately three miles of the Upper Deschutes River where it flows through the La Pine State Park. The Middle Deschutes River is also classified as a State Scenic Waterway from Sawyer Park in Bend, to Lake Billy Chinook (see Map 9-Special Management Areas). The Upper Deschutes Wild and Scenic River flows over 54 miles between Wickiup Reservoir and the Bend Urban Growth Boundary and is administered by the Deschutes National Forest.

Current BLM management of the Middle Deschutes and Lower Crooked Wild and Scenic Rivers is guided by the Middle Deschutes/Lower Crooked Wild and Scenic Rivers' Manage-

ment Plan (1992). Management of the Lower Crooked Wild and Scenic River-Chimney Rock Segment is outlined in the Lower Crooked Wild and Scenic River (Chimney Rock Segment) Management Plan (1992). The overall goal of both management plans for the river areas is to meet the intent of the Wild and Scenic Rivers Act by maintaining the current character of the river areas, and providing long-term protection and enhancement of their outstandingly remarkable values.

To better manage the rivers and to protect and enhance their outstandingly remarkable values, private lands within and adjacent to the river corridors are given high priority for exchange or purchase to add to existing public lands.

Areas of Critical Environmental Concern (ACEC)

The Federal Land Policy and Management Act (FLPMA) provides for ACEC designation and establishes national policy for the protection of Areas of Critical Environmental Concern (ACECs). Section 202(c)(3) mandates BLM to give priority to the designation and protection of ACECs in the development and revision of land use plans. Under FLPMA, the Secretary of the Interior and the BLM were directed to designate as ACECs: ". . . areas within the public lands where special management attention is required . . .to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards."

BLM's planning regulations (43 CFR 1610.7-2) establish the process and procedural requirements for ACEC designation in resource management plans and revisions.

The Brothers/La Pine RMP designated six ACECs within the Upper Deschutes Planning Area. The RMP included specific guidance for the Badlands, Lower Crooked River, and Wagon Road ACECs. The RMP noted that separate, more comprehensive management plans would be developed for Horse Ridge and Powell Butte ACECs/RNAs and for the Peck's Milkvetch ACEC.

Management direction for three of the ACECs is also provided by the following: The Badlands ACEC is within the Badlands WSA which is managed under BLM Interim Management Policy. The Lower Crooked River ACEC is managed in accordance with the Lower Crooked Wild and Scenic River (Chimney Rock Segment) Management Plan. The Wagon Road ACEC/RNA is managed through cooperative agreement with the Deschutes County Historical Society.

A management plan was completed for the Horse Ridge ACEC/RNA in 1996. This plan provides for prohibition of disturbing activities, a prescribed natural fire plan, floristic inventory, and ongoing monitoring of the resources on-site and of intrusions. Additionally, management of the ACEC is constrained by the Wilderness IMP since this area is also the Western Juniper ISA (see Wilderness section, above).

Management plans for Powell Butte ACEC/RNA and Pecks Milkvetch ACEC have not been completed.

Caves

The Brothers/La Pine RMP does not contain any specific management direction for caves or cave resources. Management actions, policies or processes undertaken since the 1989 RMP effort include:

- The public nomination of many caves for listing as significant under the Federal Caves Resources Protection Act (FCRPA);

- Stout Cave was closed to all uses through a Federal Register Notice of emergency closure in 1998.

The FCRPA directed Federal Agencies to prepare and maintain a list of significant caves. A cave must posses one of more of the following values - biological, cultural, geologic/mineral/paleontologic, hydrologic, recreational, or educational - to be listed as "Significant." The listing of significant caves involves two separate processes. The initial listing process, conducted in 1995, was coordinated by a national interagency effort in consultation with individuals and organizations interested in cave resources. This process had three steps: 1) nomination; 2) evaluation; and 3) listing.

The second listing provides a means for updating the initial list, and will continue indefinitely. BLM supplemental procedures allow for an abbreviated subsequent process where BLM Field Managers may directly list significant caves without going through the nomination process. All location information is kept confidential throughout the evaluation and listing process. If a cave is found to be Significant, it is given interim protection until it can be incorporated into a Resource Management Plan.

Approximately 44 caves in the planning area have been nominated for listing as Significant under the FCRPA. Of this total, nine caves have been determined significant and three have been determined non-significant. Significance determinations have not been made on the remaining 32 nominated caves. Approximately half of the remaining nominated caves are located on private land and will be excluded from significance determination. Caves that were found to be significant are protected under interim management guidelines of the FCRPA.

In response to increased recreational use at caves in the Arnold lava tube system, the Deschutes National Forest began the Road 18 Cave Management Strategy EA in 1999. This EA addresses the continued degradation of unique and non-renewable caves and cave resources located east of Bend. The Deschutes National Forest has not yet completed this site-specific cave management EA. Issues being considered in this EA are the creation of new user created roads and parking areas, increase in dispersed trails, litter, drilling and placement of rock climbing hardware in cave walls and ceilings, the use of chalk by rock climbers, and impacts of visitors to cave resources, including wildlife, cultural resources, and visual resources. Stout Cave is also located within the Arnold Lava Tube system, and in response to many of the same concerns, the BLM closed Stout Cave to all uses in 1998. The cave is monitored by volunteers from ASCO, and occasionally by BLM staff.

Although considerable effort has been taken in developing a master plan for Redmond Caves, the site is essentially unmanaged and open to visitors 24 hours a day. The isolated 40-acre parcel is open to motor vehicle access. Dumping and illegal occupancy occur frequently, and the degradation of cave resources continues.

Visual Resources

The Brothers/La Pine RMP identifies areas having "high or sensitive visual quality." However, the RMP did not identify Visual Resource Management Classes which would allow consideration of visual resources in project level planning. Most of the area designated as having high or sensitive visual quality in the Brothers/La Pine RMP is located to the northeast of the current RMP planning area boundary. Many key visual elements in the planning area, including Horse Ridge, Cline Buttes, and canyon areas used extensively for recreation, do not have clear guidance on visual resources or objectives for future management.

Since the Brothers/La Pine RMP was prepared, BLM policy (Instruction Memorandum 2000-096 and BLM Handbook H-8410-1) has directed that all Wilderness Study Areas

receive a Class I VRM designation instead of the Class II designation previously applied to WSAs. Both Steelhead Falls WSA and Badlands WSA are affected by this policy change.

Under BLM policy, the BLM has a basic stewardship responsibility to identify and protect visual resources on public lands. To provide a framework for considering scenic values during project level planning, BLM-managed lands are classified according to their scenic quality, the presence and sensitivity of viewers, and the distances from which these lands are generally viewed. By evaluating these components and public comments in the Resource Management Planning process, Visual Resource Management Classes are determined.

Visual Resource Management (VRM) Classes specify desired objectives for retaining or enhancing visual quality. Class I lands are typically those lands which have the very highest scenic quality and where the sensitivity of viewers to unnatural alteration or contrast is highest. Class I areas include Wilderness, WSAs, RNAs, and ACECs that are designated based on visual resources. Class II lands include areas with high to moderate scenic quality and where some level of alteration and introduced contrast is allowed. Class III lands include areas of moderate to low scenic quality and correspondingly greater and more noticeable changes in the landscape. Class IV lands include areas of low scenic quality and allows for relatively high levels of introduced contrast (highly noticeable) with the existing landscape.

Archaeological Resources

The Brothers/La Pine RMP provides the following direction for cultural resources: Identify cultural resource sites and manage for information potential, public values, and conservation. Ensure authorized land use actions do not inadvertently harm or destroy federal or non-federal cultural resources. Periodically patrol known cultural resource areas. Evaluate sites to determine if they are eligible for National Register of Historic Places. Develop cultural resource management plans for areas with high cultural resource values. During any construction project or ground disturbing action, if buried cultural remains are encountered during operations, activities will be suspended until evaluation and appropriate action is determined.

BLM activities must also be consistent with the following laws and directives.

1. The Middle Oregon Treaty, signed June 25, 1855 and ratified March 8, 1859 (12 STAT 963), reserved rights for the Confederated Tribes of Warm Springs to continue off-reservation subsistence activities on public lands, involving fishing, hunting, gathering, and grazing.

2. The Historic Sites Act of 1935 provides for the preservation of historic American sites, buildings, objects, and antiquities of national significance.

3. The National Historic Preservation Act (NHPA) of 1966, as amended, provides a national policy for historic preservation, establishes a National Register of Historic Places (NRHP) designation for important properties, protects sites from destruction without appropriate data recovery, and requires that historic properties be utilized in agency missions when warranted. The Act also provides agency direction to identify, document, and preserve areas of traditional cultural significance and to encourage the continuation of traditional cultural lifeways.

4. The Archaeological Resources Protection Act (ARPA) of 1979, as amended, defines and protects archaeological resources on Federal lands, establishes a permit system for resources over 100 years old, and requires agencies to provide for public education and continuing inventory of Federal lands

5. Executive Order 11593 directs federal agencies to inventory public lands and nominate eligible properties to the National Register of Historic Places.

6. BLM Manual Sections 1623 and 8100 provide management policy and use allocations for the disposition and utilization of agency-managed cultural resources.

7. The National Cultural Resources Programmatic Agreement between the BLM, Advisory Council on Historic Preservation, and State Historic Preservation Offices describes the manner in which the BLM will meet its responsibilities under the National Historic Preservation Act.

8. The Protocol for Managing Cultural Resources on Lands Administered by the BLM in Oregon implements the National Cultural Resources Programmatic Agreement in Oregon and describes how the Oregon State Historic Preservation Officer and the BLM will interact and cooperate under that agreement.

9. BLM Manual Section 8160, entitled "Native American Coordination and Consultation," establishes an agency policy toward Native Americans, integrating the management of resources of value to American Indians into all programs.

Transportation and Access

Legal access, either vehicular or by foot, is available to the larger tracts of public land in the Brothers/La Pine Planning Area (see Map 11-Roads Map). There are, however, some tracts without access rights across private land which are important for administrative purposes and public use. Map 6 in the Brothers/La Pine RMP shows tracts with high public values where public access is lacking in the Brothers' portions. No needs for additional public access were identified in the La Pine portion. The Brothers/La Pine RMP did not address access for the isolated federal parcels on Powell Buttes.

Land Tenure

Under the Brothers-LaPine Resource Management Plan, BLM managed land in the planning area is placed into three zones for potential land tenure adjustment (See Map 16-Land Tenure Zones). Zone 1 delineates lands which have been identified as having national or statewide significance. They are identified for retention in public ownership. They are also areas where emphasis will be placed on increasing public land holdings through donation, exchange or sale. These lands possess significant visual, wildlife, watershed, special status species, wilderness, recreation, vegetative, cultural or other public values. Public lands in Zone 2 have potentially high resource values for timber, recreation, riparian, watershed, special status species, cultural and or wildlife. They are identified for retention or possible exchange for land with higher resource values or transfer through the Recreation and Public Purposes Act (R&PP). Public land in Zone 3 are scattered, isolated tracts with generally low or unknown resource values. They are lands potentially suitable for transfer or disposal of significant recreation, wildlife, watershed, special status species and /or cultural values are not identified.

Rights-of-Way

In the Brothers-LaPine RMP, public lands are available for rights-of-way, including multiple use and single use utility/transportation corridors following existing routes, communication sites and roads.

Rights-of-Way are authorizations for reservoirs, canals, ditches flumes, laterals, pipes, pipelines, tunnels, and other appurtenances for the storage and distribution of water; pipelines and other systems for the transportation of distribution of liquids and gases other than water or oil; transportation and distribution systems, and storage facilities for solid materials; systems for generation, transmission, and distribution of electric energy; communications systems; roads, highways, trails, and other transportation facilities; and other systems and facilities which are in the public interest. Rights-of-Way include easements, leases, permits, or licenses to occupy, use, or traverse public lands.

All utility/transportation corridors identified by the Western Regional Corridor Study are currently occupied and are hereby designated. The future upgrading of existing uses permitted on these corridors is likely, as is co-occupation with other compatible rights-of-way, and may require additional right-of-way width.

Corridor widths vary depending on the number of parallel facilities, but are a minimum of 2,000 feet (1,000 feet on either side of existing center-lines) unless adjacent to exclusion area described below. Applicants are encouraged to locate new facilities (including communication sites) adjacent to existing facilities to the extent technically and economically feasible.

All rights-of-way applications are reviewed using the criteria of following existing corridors wherever practical and avoiding proliferation of separate rights-of-way. Recommendations made to applicants and approved actions are consistent with objectives in the RMP. All designated Areas of Critical Environmental Concern and Wilderness Study Areas are considered right-of-way exclusion areas. Federally designated Wild and Scenic Rivers, as well as rivers identified as eligible for designation as Wild and Scenic, will also be considered exclusion areas, except as needed for expansion of existing public highways and other like public purposes. All areas identified as having special status plant or animal species will be avoidance areas. Areas having high or sensitive visual qualities will be avoided or designed with appropriate mitigation measures.

Existing communication sites are listed in Table 4A-Existing Communication sites. All, with some restrictions, have the potential for future expansion.

Withdrawals

A withdrawal is a formal action that accomplishes one or more of the following actions:

- Transfers total or partial jurisdiction of Federal land between Federal agencies;
- Segregates (closes) Federal land to some or all of the public land laws and/or mineral laws. Segregation may be withdrawn from operation of the general land laws and closed

Table 4A. Existing Communication Sites

Communication Site Name	Legal Description
Grizzly	T.13S., R.15E., W.M., Oregon Section 17: SE¼.
Cline Buttes	T.15S., R.12E., W.M., Oregon Section 21: NE¼.

to non-metalliferous mining (cement quality limestone, diatomite etc.), but open to metal mining (gold, silver, mercury etc.); or withdrawn from operation of the general land laws and the mining laws; or withdrawn from the general land laws; and

- Dedicates land for a specific public purpose.

Three major categories of formal withdrawals exist:

Congressional Withdrawals are legislative withdrawals made by Congress in the form of public laws (Acts of Congress);

Administrative Withdrawals are made by the President (E.O. - Executive Order), Secretary of the Interior (S.O. - Secretarial Order), or other authorized officers of the executive branch of the Federal government;

Federal Power Act or FERC Withdrawals are power project withdrawals established under the authority of the Federal Power Act of 1920. Such withdrawals are automatically created upon filing of an application for a hydroelectric power development project with FERC.

The Upper Deschutes planning area has existing withdrawals for public water reserves and for military uses, pending withdrawal application. Appendix E contains a list of the existing withdrawals.

Temporary Authorizations/Recreation and Public Purposes Act

Recognizing the strong public need for a nationwide system of parks and other recreational and public purpose areas, Congress enacted the Recreation and Public Purposes (R&PP) Act (1979). The act authorizes the sale or lease of public lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations. Examples of typical uses under the act are historic monument sites, campgrounds, schools, fire houses, law enforcement facilities, municipal facilities, landfills, hospitals, parks, and fairgrounds. The act applies to all public lands, except National Forests, National Parks and Monuments, National Wildlife Refuges, Indian lands, and acquired lands. BLM may sell or lease only the amount of land required for efficient operation of the projects described in an applicant's development plan.

In the Upper Deschutes planning area, R&PP has been used for sewage treatment facilities in Bend, Redmond, and La Pine; golf courses; libraries; parks; and shooting ranges. Potential future R&PP proposals include lands for sewage treatment facility expansions, municipal parks, and State Park expansions.

Lands Identified for Disposal

The Brothers/La Pine RMP identified approximately 21,802.67 acres of public land for disposal that are also within the boundary of the Upper Deschutes Planning Area. Land exchanges and sales are evaluated for plan conformance and viability on a case-by-case basis. The primary means of disposal would be through exchange, with emphasis on acquiring state and private land. If the parcels are found suitable for disposal, a land classification would be issued that states this information. The Deschutes Resource Area will continue to dispose of property as the need arises. Refer to Appendix F for the legal descriptions of those public lands remaining available for disposal.

Recreation

Motorized Recreation

Off-Highway Vehicle (OHV) Designations

BLM-managed lands are designated as either "Open," "Limited," or "Closed" to motorized use through all BLM Resource Management Planning efforts. These designations are defined by the BLM's National OHV Strategy (2000) as:

> Open: The BLM designates areas as "open" for intensive Off-Road Vehicle (ORV) use where there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel.
>
> Limited: The agency designates areas as "limited" where it must restrict ORV use in order to meet specific resource management objectives. These limitations may include: restricting the number or types of vehicles; limiting the time or season of use; permitted or licensed use only; limiting use to existing roads and trails; and limiting use to designated roads and trails. The BLM may place other limitations, as necessary, to protect resources, particularly in areas that motorized OHV enthusiasts use intensely or where they participate in competitive events.
>
> Closed: The BLM designates areas as "closed" if closure to all vehicular use is necessary to protect resources, ensure visitor safety, or reduce use conflicts.

These designations are incorporated in the BLM's 8340 Manual (issued May 25, 1982) which provides land managers with general guidance in managing ORVs on public lands.

The Brothers/La Pine RMP designated all BLM-managed lands in the planning area as either "Open," "Limited," or "Closed." The travel management designations in the Brothers/La Pine RMP have subsequently been amended or altered by emergency closures. These include changing the following areas from "Open" to "Limited":

- the Mayfield Pond area between Alfalfa Market Road and Powell Butte Highway;

Changing the following areas from "Open" to "Closed"

- the Airport Allotment area northeast of the Dodds/Alfalfa Market Road intersection; and
- the 254-acre Section 15 parcel east of Redmond at 19th Street and Antler Avenue;

Changing the following areas from "Limited" to "Closed"

- the 1,477-acre Smith Rock parcel of BLM-managed land.

These current travel management designations are shown on Map 12-Travel Management Designations. For the current planning area, the approximate acres of each travel management designation made in the 1989 Brothers/La Pine RMP is shown in Table 4B-OHV Designations below.

With the exception of the Badlands WSA and Millican Valley area, the lands designated as "Limited" in the Brothers/La Pine RMP did not undergo any further NEPA analysis to designate specific routes. The Cline Buttes block of BLM-managed land is an example of a steady demand for OHV opportunities with no designated or understandable routes established. These areas have seen a proliferation of new user-created routes. The Tumalo block of BLM-managed lands was identified in the RMP as an area that needed subsequent development of a recreation area management plan. A more specific management policy for this area has also not been implemented. All BLM-managed lands in the La Pine area were

Table 4B. OHV Designations in Planning Area[1]

Travel Management Designation	Brothers/La Pine Designations within current planning boundary[2]
Open	229,381 acres (60.3%)
Limited	144,917 acres (38.1%)
Closed	5,850 acres (1.6%)

[1]Planning area acreage estimated at 380,148 acres.

[2]OHV designations in planning area estimated from maps and tables in Brothers/La Pine RMP.

designated as "open" in the Brothers/La Pine RMP. Two small areas (The Rock and the Rosland OHV Play Area) have subsequently been designated as "limited" in the La Pine area.

In response to public use, approximately 60,000 acres in Millican Valley was designated in 1978 for OHV use through the Millican Valley Off-Road Recreation Vehicle Management Plan. In response to resource concerns, adjustments were made to the 1978 management plan and adopted into the 1989 Brothers/La Pine RMP. After the adoption of the RMP, casual use began to increase with the area's population growth and designation of the OHV area. Although competitive use under permit was limited to designated routes, the increased casual use in restricted or limited areas was not enforced, leading to an increase in new roads and trails throughout the OHV area (see Table 4C-Existing Road and Trail Miles in the Milican OHV Area).

Increased OHV use in the Millican area and continued concern for soils and wildlife prompted the Prineville District BLM to develop a Draft Millican Valley OHV Plan in June 1996. This plan proposed to change the Millican OHV area to a designated road and trail system only, as well as change seasons of use to further protect sage grouse. A Decision Record (DR) was issued in April of 1997.

The new plan proposed expanding the OHV area north into the Millican Plateau (which was then designated as "Open"), restricting all motorized use to designated roads and trails, limiting staging, parking and warm-up areas, changing seasons of use to allow more year-

Table 4C. Existing Road and Trail Miles in the Milican OHV Area

Roads/Trails	North Area	South Area	OHV Area Total
Total Existing[1]	316	179	495
Designated	303	160	463
Closed	13	19	32

[1]Total Existing does not include the portion of the Millican Plateau area north of Reservoir Road (from the Draft Millican Valley Off-Highway Vehicle Management Plan and Environmental Assessment; June 1996).

round OHV opportunities, closing and rehabilitating many roads, trails and hill climb areas, and developing and defining the staging and parking areas with trailheads.

Table 4D summarizes the miles of designated roads and trails allowed under the 1997 Decision Record. This designation of roads and trails was intended to use many existing routes but also develop additional miles of higher quality (more technical) trails for OHV use.

Several appeals were made on the 1997 DR and a subsequent lawsuit was filed which led to litigation before a Federal court. The ruling from this court (Civil NO. 98-29-ST) found that BLM did not adequately analyze cumulative impacts of OHV use. The court ruling found that an Environmental Impact Statement (EIS) was necessary to further address these issues. BLM negotiated with the litigants to modify the management plan to allow for interim OHV use while BLM completed an EIS to fulfill the court order. The final consent judgement describing the interim allowable use and management in the surrounding area was signed in December of 1999.

Existing and On-going OHV Management

With the recent addition of the Millican Plateau, located north of Reservoir Road, the OHV Area encompasses 82,886 acres, divided into three management units, each managed for different seasons of motorized use. All use is limited to a designated trail system in which mostly existing roads and trails and have been developed and designated for each type of motor vehicle. Three types of motor vehicle use occurs, including, motorcycles, quads, and full size vehicles, with the classification listed below:

Class I= Quads and Three Wheelers
Class II= Full Size Vehicles
Class III= Motorcycles

Implementation of the interim management from the court ruling resulted in development of the interim system, including signing the designated roads and trails, construction of new trails to avoid private lands, closing and rehabilitating roads and trails, development of designated staging/parking areas, wood barricades, and wire fencing.

Parking and Staging Areas

Under the interim management, parking and staging areas have been designated for all areas. In the south area, there are currently three parking areas, but no staging area. Permit

Table 4D. Proposed Designated Trail System Miles

Management Area	Existing	New Construction	Total
North Area	92	89	181
South Area	41	3	44
Sub-Total	133	92	225
Millican Plateau	20	17	37
Grand Total	153	109	262

SOURCE: Millican Valley OHV Management Plan and Decision Record, April 1997.

requests for competitive use may be authorized in the south area, but events must use staging areas on lands other than BLM. Parking areas are defined with wood rail fencing and are each about one acre in size. The north area has one parking area, one event staging area, and two play areas at existing material sites (ODOT Pit and Cinder Butte). The Plateau has one parking area providing access to both the Plateau and the North area, and is defined by a juniper rail fence and is about four acres in size. Parking areas have map boxes and information boards. Camping is allowed but much of the use is by day users.

Road Density

The overall road density from user-created roads and trails prior to 1993 was 4.9 miles of road per square mile of lands within the OHV area. The 1996 revision of the Millican Valley Plan and the 1997 DR called for a reduction in road and trail miles to a proposed 2.6 mile/mile^2. Litigation resulted in BLM taking a conservative approach in designating roads and trails for use and BLM began closing routes that were planned for permanent closure. Recently, the BLM performed a thorough analysis of existing and designated road and trail miles using global positioning systems and determined all road and trail types, along with segment lengths, to accurately determine road and trail density. Under the current interim management, the designated road and trail density is equal to or less than 2.0 mile/mile^2.

Non-Motorized Recreation

Equestrian Use

The Brothers/La Pine RMP did not provide management direction for equestrian use on BLM- managed lands in central Oregon. No area management plans or site-specific facility plans have been prepared for equestrian recreation opportunities in the period after the RMP was adopted. However, in some cases, areas closed to motorized use through emergency closures or EAs (e.g., the Airport Allotment at Alfalfa Market Road/Dodds Road and BLM-managed lands at U.S. Highway 20/Rickard Road) have resulted in maintaining or improving areas for equestrian use.

Hiking/Running

The Brothers/La Pine RMP did not provide management direction for hiking/running on BLM- managed lands in Central Oregon. No area management plans or site-specific facility plans have been prepared for hiking/running opportunities in the period after the RMP was adopted. However, in some cases, areas closed to motorized use through emergency closures (e.g., the Airport Allotment at Alfalfa Market Road/Dodds Road and BLM-managed lands at U.S. Highway 20/Rickard Road) have resulted in providing areas for focused hiking or running opportunities.

Mountain Biking

The Brothers/La Pine RMP did not provide management direction for mountain biking on BLM- managed lands in Central Oregon. No area management plans or site specific facility plans have been prepared for mountain biking opportunities in the period after the RMP was adopted, although the Millican Valley OHV Plan (1997) contained management policy that does affect mountain bike use.

Following the 1989 RMP, the Millican Valley OHV Plan restricted motorized and mechanized use within the boundaries of the Millican Valley OHV area to trails designated for motorized use. This plan also adopted seasonal use restrictions for mountain bike, however, as this plan was focused on OHV use, few, if any mountain bicyclists know that use restrictions in areas along U.S. Highway 20 apply to their use. These restrictions include:

North Millican Area

- No mechanized (i.e., mountain bike) use off the designated OHV trail system in North Millican Area; and

- The portion of the designated OHV trail system within the crucial deer winter range area at North Millican is open to mechanized (i.e., mountain bike) use only from May 1 to November 30 each year.

South Millican Area

- No mechanized use (i.e., mountain bike) off the designated OHV trail system in the South Millican Area; and

- The designated trail system in South Millican is open to mechanized use (i.e., mountain bike) only from August 1 to November 30 each year.

These restrictions limit mountain bike use in a fairly large area of BLM-managed lands to a system developed for OHVs. By restricting mountain bike use in these areas to OHV trails which are constructed and maintained to accommodate Class I vehicles (quads), the opportunity to ride challenging singletrack trails (which many mountain bicyclists prefer) is lost, and bicyclist are limited to sharing trails with motorized users.

Badlands WSA

- Mountain bike use in WSAs is governed by Interim Management Policy for Lands Under Wilderness Review (IMP). This policy mandates that no new permanent recreational ways or trails will be permitted. Essentially, mountain bike use in the Badlands WSA is limited to designated routes, although the seasonal closures, other than the area around Badlands Rock, do not apply to mountain bike use. The creation of new routes in the Badlands by cross-country mountain bike travel is prohibited by the IMP.

Rock Climbing

The Brothers/La Pine RMP did not provide management direction for rock climbing on BLM- managed lands in central Oregon. BLM does have the ability to issue Federal Register notices to implement emergency closures on rockclimbing routes to protect nesting raptors. However, in general, BLM does not actively manage rock climbing or other recreational uses on lands adjacent to Smith Rock State Park. The State Park closes specific climbing routes seasonally to minimize disturbance to nesting raptors, however, this management tool has not been used by the BLM. The State Park uses volunteers extensively to perform trail maintenance and to define and maintain climbing route base areas. In general, trails to climbing areas and the base areas themselves are not defined or maintained on BLM-managed lands adjacent to the State Park.

All uses, including rock climbing, have been prohibited at Stout Cave through an emergency closure/Federal Register notice and are subject to restrictions specified in the Interim Management Policy for caves.

Target Shooting

The Brothers/La Pine RMP did not provide management direction for target shooting. Since adoption of the RMP in 1989, emergency shooting closures have been adopted by the BLM to minimize disturbance to nesting raptors. In other cases, emergency shooting closures have been adopted to minimize disturbance to residents adjacent to parcels of public land. In response to many of the same social conflicts, Deschutes County and some of the larger subdivisions (e.g., Crooked River Ranch) have closed areas to shooting.

Shooting is regulated on BLM-managed lands through the Code of Federal Regulations (CFRs). 43 CFR 8365.2-5a prohibits the discharge of firearms, other weapons, or fireworks

on developed recreation sites or areas. As defined in the CFRs (8360.0-5), a developed site or area is:

> "...sites and areas that contain structures or capital improvements primarily used by the public for recreation purposes. Such sites or areas may include such features as: delineated spaces for parking; camping or boat launching; sanitary facilities; potable water; grills or fire rings; tables; or controlled access."

However, this regulation does not apply to the majority of BLM-managed lands in the planning area, which are generally devoid of developed sites or areas. Therefore, there are few management tools available to BLM staff and law enforcement officers for dealing with unsafe shooting practices on BLM-managed lands.

The CFRs do provide that State and local laws apply and are enforced regarding the use of firearms and other weapons (43 CFR 8365.1-7). These include laws prohibiting discharging weapons on or across highway, ocean shore, recreation area or public utility facility (Oregon Criminal Code 166.630) and laws prohibiting intentional discharge of a firearm within city limits, in residential areas within urban growth boundaries, at or in the direction of any person, building, structure, or vehicle within the range of the weapon (Oregon Criminal Code 166.220).

However, these laws cannot be enforced by BLM law enforcement officers, and generally lead to no satisfactory legal mechanism for dealing with unsafe shooting on BLM-managed public lands that are outside city limits or urban growth boundaries, yet are surrounded by residential neighborhoods. In response to the large number of complaints about firearms use on public lands in the urban interface, the BLM has responded by posting "Safety Zone - No Shooting" signs. These signs serve to notify the public that houses are nearby, but are not a legal remedy for unsafe or nuisance shooting practices.

Since the adoption of the 1989 RMP, BLM issued a R&PP Act lease for the development of a public shooting range east of Bend (see Temporary Authorities and Recreation and Public Purposes Act). The site is operated by the Central Oregon Shooting Sports Association (COSSA) and the lease provides that the site be available to the public for shooting opportunities.

Rockhounding

The Brothers/La Pine RMP identified certain "Rockhounding Areas" that would be managed to "provide for continued availability of rockhounding opportunities." Developing rockhounding management plans for Fischer Canyon, and North Ochoco Reservoir Areas within the planning area was assigned high priority.

Developing a rockhounding management plan for Reservoir Heights within the planning area was desiganted moderate priority.

None of the rockhounding areas identified in the Brothers/La Pine RMP have undergone any site-specific NEPA analysis, therefore, no specific management plans have been developed, despite the continuing popularity of this activity and use in these areas.

Water Based Recreation

The Brothers/La Pine RMP did not provide management direction for water based recreation in the planning area. Most of these recreation activities are managed through the Wild and Scenic River management plans prepared for the Lower Crooked River, Lower Crooked (Chimney Rock Segment), Middle Deschutes, and Upper Deschutes River segments.

The Brothers/La Pine RMP did identify the following high priority implementation items:

- Develop recreation area management plan for Prineville Reservoir/Lower Crooked River in cooperation with other managing agencies and affected individuals.

- Maintain or improve existing recreation facilities adjacent to the Lower Crooked River at an acceptable standard.

These items have been accomplished or are in progress. A variety of recreation facility improvement projects have occurred on the Lower Crooked River since the completion of the RMP. The BLM is collaborating with the BOR on their ongoing management plan process for Prineville Reservoir.

No specific management policy or goals have been developed to manage use at Reynolds Pond, Mayfield Pond, or other small water bodies in the planning area. A travel management designation change has been implemented for the area around Mayfield pond (see the Off-Highway Vehicle (OHV) Designations section).

Hunting

The Brothers/La Pine RMP does not provide management direction for hunting. Hunting licenses, tags, and regulations are administered by the Oregon Department of Fish and Wildlife (ODFW). ODFW develops management objectives for wildlife populations in each hunting unit, and provides hunting opportunities accordingly.

Hunting is an extremely popular activity in the planning area, both for local residents and visitors. The number of hunters and the dispersed nature of the activity make visitor contacts and management difficult. This situation is exacerbated by the limited number of game officers in Central Oregon.

The BLM does set travel management policy for BLM-managed lands in Central Oregon. These policies affect the ease of access and the type of hunting opportunities available. Travel restrictions on BLM-managed lands are often not clearly signed, either due to lack of field staff, to repeated vandalism of signs, or both. Several areas with “Limited” OHV designations or designated routes experience widespread violations of vehicle closures during hunting season.

BLM and ODFW have several cooperative agreements that manage motorized vehicle travel in selected portions of hunting units. These areas typically have a designated route system during specific hunting seasons. These areas include BLM-managed lands near Tumalo, and the South Millican Valley area. For the most part, these travel management needs have not been incorporated into any long-term travel management plans for these areas.

Some project work is done by BLM to promote or manage wildlife, often in collaboration with ODFW, and hunter or wildlife conservation groups. This work includes installation and maintenance of water catchments (guzzlers), juniper and pine thinning, bitterbrush plantings, and other projects.

Land Uses

Livestock Grazing

Livestock grazing on BLM-managed land in the planning area is guided by two RMPs, several activity plans, and by the Standards for Rangeland Health and Guidelines for Grazing Management (BLM 1997). The Brothers/La Pine RMP covered livestock grazing management for the La Pine area, and incorporated by reference the livestock grazing

management previously provided in the Brothers Grazing Management Program EIS (Prineville BLM, ROD 1983), which covered most of the northern planning area. Direction for livestock grazing management on BLM-managed land in Jefferson County is provided in the Two Rivers RMP (ROD 1986). These plans set management goals by allotment, defined which areas were available for livestock grazing, and allocated a specific amount of forage to livestock and wildlife (see Appendix D-Livestock Grazing in Upper Deschutes RMP Area). The RMPs also proposed grazing systems and rangeland treatments and developments by allotment, though these implementation decisions were to be analyzed and finalized at a later date using site-specific information.

In 1992, the Prineville District BLM completed the Middle Deschutes/Lower Crooked Wild & Scenic Rivers' Management Plan and EA, declaring the lands within 1/4 mile of the river unavailable for livestock grazing except when used as a tool for weed control or other purposes.

The Brothers Grazing EIS, the Brothers/La Pine and Two Rivers RMPs, subsequent Rangeland Program Summaries, and Prineville District Planning Updates outlined proposed grazing systems for all allotments. Grazing systems for some allotments in the planning area have been documented and described in Allotment Management Plans (AMPs). An AMP directs management of livestock grazing on specified public land in order to achieve objectives relating to desired resource conditions, sustained yield, multiple use, and ranch economics. AMPs identify grazing systems/schedules and rangeland projects needed to meet resource objectives. Grazing systems in other allotments have been implemented by agreement and incorporated into grazing permits. On the remaining allotments, land use plan decisions regarding grazing systems have not been implemented, but are scheduled to be made.

The Standards for Rangeland Health and Guidelines for Grazing Management (BLM, 1997) are the basis for assessing and monitoring rangeland conditions and trend toward or away from improved range conditions. At this time, assessments have been completed on two allotments within the planning area, encompassing about 5,000 acres. The Prineville District BLM has set a general goal of completing assessments on all allotments by 2008.

The BLM has completed numerous rangeland treatments and developments in the planning area to stabilize watershed condition, improve wildlife habitat, increase livestock forage availability, and improve or protect other resource values. Examples of rangeland treatments and developments are grass seeding, brush/tree control, fences, water pipelines, and cattle guards. These projects were generally proposed in an RMP, but required site-specific analysis of the projects' impacts prior to implementation.

As mandated in the FLPMA in 1976, and PRIA in 1978, a portion of the grazing fees paid by permittees is invested in range improvements with the expectation that these improvements may benefit wildlife, watersheds, and/or livestock producers. Through use of emergency fire rehabilitation funds, additional public land resources have been protected or enhanced through range improvement projects. Livestock operators, state and federal agencies, and other interested public entities have provided additional funds for implementation of rangeland projects.

Timber, Firewood and other Vegetative Products

Management direction in the Brothers/La Pine RMP regarding timber, firewood and other vegetative products is summarized in the Vegetation section under Forestlands and Woodlands.

Minerals

The Brothers/La Pine RMP reiterated established BLM policy for managing mineral and energy resources with the following general principles:

1. Public lands will remain open and available for mineral exploration and development, except where withdrawal or other administrative mining actions are clearly justified in the national interest.

2. The BLM will encourage and facilitate the development of public land mineral resources by private industry where conflicts can be mitigated.

3. The BLM will process mineral applications, permits, leases and other use authorizations in a timely and efficient manner.

4. BLM plans and decisions will recognize that mineral exploration and development can occur concurrently or sequentially with other resource uses.

The exploration for traditionally locatable mineral resources in the planning area is minimal. No hardrock mineral resources are currently being explored for within the planning area.

While the east side of the Cascades has been classified as potentially valuable for geothermal resources, most public lands outside the Deschutes National Forest Newberry Crater National Volcanic Monument have a low potential for development. It is unlikely that any new exploration for geothermal resources will take place within the planning area.

Increased interest in prospectively valuable oil and gas leases will continue to occur within the planning area. Leases fall under a ten year term. Past exploratory wells drilled in the area have produced oil and/or gas. Prior to ground disturbing activities on an oil/gas or geothermal lease, the operator is required to submit plans to minimize adverse impacts to land, air, water, cultural, biological, visual, and other resources. These plans must be approved by the BLM and include reclamation plans which might be necessary to rehabilitate surface disturbances. The Brothers/La Pine Planning Area was considered within an area-wide oil, gas and geothermal Environmental Assessment. As a result of this EA, special stipulations were established including seasonal restrictions in deer wintering areas and sage grouse strutting grounds and no surface occupancy around Prineville Reservoir and Crooked River Canyon. In addition, there are Wilderness Study Areas that have a special stipulation attached. These special stipulations, along with standard stipulations, are attached to all leases issued.

Sand, gravel, clay and cinders are sold or provided as free-use, in small to moderate amounts from several sites within the planning area. These minerals are made available for sale on a limited basis when a public need is demonstrated and the sales will not compete with private enterprise. The Oregon Department of Transportation is currently investigating sites for road base materials needed to facilitate increasing road building and maintenance needs in Central Oregon. Many of the best sites have been identified on BLM-managed lands. The Brothers/La Pine RMP did not foresee the importance of the saleable resources to the economy of local communities or the energetic opposition that some local communities would have to placement of rock pits near their borders. Increased construction demands in the urban interface have resulted in the BLM receiving more requests for common construction grade sand, gravel, clay and cinders. Identifying the number of existing and underdeveloped public and private sites for mining of industrial minerals and construction aggregates is an important step in planning for future land uses.

Public Safety

Shooting

Since many BLM-managed lands are located adjacent to or within developed areas, firearm use on public lands has become a public safety concern. Emergency shooting closures have been adopted by the BLM to minimize safety hazards and disturbance to residents adjacent to parcels of public land. In other cases, emergency shooting closures have been adopted by the BLM to minimize disturbance to nesting raptors. Since the adoption of the Brothers/La Pine RMP in 1989, approximately 6,500 acres of BLM-managed public lands have been closed to shooting. Most of this acreage is located along the Middle Deschutes Wild and Scenic River. Other smaller areas closed to shooting are located in the BLM Cline Buttes block. In response to many of the same social conflicts, Deschutes County and some of the larger subdivisions (e.g., Crooked River Ranch) have closed areas to shooting.

Hazardous Materials

While there is no specific direction for management of hazardous materials in the Brothers/ La Pine RMP, many federal, state and local laws and BLM policy and authorizations govern specific management actions of the District hazardous materials program. This management direction and emphasis provides for the highest priority for the protection of the public health and welfare, employee safety, and protection of the environment from the threat and/ or exposure to hazardous materials.

Many of the above laws, policy, and authorizations are summarized in the Prineville District's Hazardous Materials Emergency Incident Contingency Plan (August 2000). The purpose of this plan is to aid in responding to suspected hazardous material incidents and to establish procedures for reporting verified incidents. The plan provides simplified guidance to all employees and supervisors of the Prineville District for most types of incidents such as accidental spills at district facilities or illegal dumping or use of hazardous or unknown materials on public lands. Key components of the plan include procedures for discovery, recognition, notifications, reporting requirements, containment, clean-up and disposal, and incident evaluation. This plan is reviewed and revised (if necessary) annually.

Vehicle/Livestock Collisions

The Brothers/La Pine RMP does not provide specific management direction regarding the prevention of vehicle/livestock collisions.

In accordance with Oregon Livestock Laws (ORS Title 48, Chapter 607), when a vehicle/ livestock collision occurs in Open Range, the vehicle operator is responsible for the damage both to the vehicle and the animal. In Closed Range, liability for damages lies with the livestock owner. Counties are responsible for drawing Open/Closed Range boundaries, and enforcing Oregon Livestock Laws. The grazing regulations (43 CFR 4120.3-1) allow the BLM to require grazing permittees to maintain fences in good working order, and enable the BLM to issue fines to people who leave gates open or cut fences. As funding allows, the Prineville District BLM has completed NEPA and decision documents to reduce the incidence of stray livestock on roads by allowing grazing permittees and private landowners to construct new or maintain old fences on BLM-managed land, or on the boundary between BLM and private land, and to install cattleguards at heavily used gates.

Fire Prevention/Fire Closures

Public regulated closures for fire include authority for temporary restrictions on access of public lands in times of extreme fire danger. This authority is not frequently invoked, but when dry, volatile conditions exist, restricted access to public lands can prevent ignitions.

The industrial fire precaution levels are designed to limit certain activities that can spark a fire. This applies only to industrial equipment use. Complete closure during periods of extreme burning conditions, at level III, allows no mechanized equipment at any time. Partial closure, level II, restricts the use of chainsaws, cable logging operations, or blasting during the active burning period in the afternoons.

The BLM currently closes the Middle Deschutes and Lower Crooked wild and scenic river corridors to campfires from June 1 to October 15th annually. More specifically, these campfire closures affect BLM-managed public lands along the Lower Crooked River from the U. S. Highway 97 bridge down to Lake Billy Chinook, and along the Middle Deschutes River from the U.S. Highway 20 bridge down to Lake Billy Chinook. The Lower Crooked Wild and Scenic River (Chimney Rock segment) was also closed to campfires annually from June 1 to October 15. However, in 2000, this stretch of river was reopened to campfires, provided the fires are contained within the BLM constructed fire rings/grates.

The Brothers/La Pine and Two Rivers RMPs provide no specific management direction concerning campfires.

Fire Suppression

Direction in the Brothers/La Pine RMP is to base suppression action on values at risk classes. Classes 4 through 6 call for aggressive and immediate suppression. Classes 1 through 3 allow for more suppression options based on fire potential and availability of suppression resources to manage the values at risk in the wildland fire environment. WSAs require conditional fire suppression action. Wildland urban interface areas are the top priority for fire suppression.

The actual suppression approach is to suppress all unplanned ignitions while allowing for the safety of the public and fire personnel, regardless of the risk class. This more conservative approach is a response to growing concerns over sage grouse viability and habitat in the high desert, which corresponds with risk classes 1 through 3.

Cooperation with other state and federal agencies, as well as local fire protection organizations, is a key to fire suppression in the planning area and throughout central Oregon.

Fuels Management

The fuels management program, which includes prescribed burning and mechanical fuels treatments (manipulation of vegetation with chainsaws or other equipment) is on a steady increase. The Prineville District has burned or otherwise treated over 30,000 acres in the years between 1996 and 2001, and is planning annual programs to treat between 15,000 and 25,000 district wide in the coming years. Much of this work is within or near the planning area, which is considered to be a high emphasis area for fuels reduction activities because of the urban interface.

The trend to expand the fuels management program is in response to direction from the National Fire Plan of 2000, which placed a high emphasis on management of fire prone ecosystems for risk reduction in the wildland urban interface and restoration of ecological process which would contribute to long-term sustainability. The plan also stresses fire prevention and community and rural fire assistance.

All prescribed burning is coordinated with ODF and adjacent land owners in accordance with written and approved fire management plans and appropriate smoke management and visibility goals and objectives.

Chapter 5
Preliminary Issues, Alternatives, and Management Opportunities

Introduction

Preliminary Issues were identified using the results of the initial"scoping"[1] conducted between 1991 and 1996 for the "Central Oregon Urban Interface Plan Amendment," and new information brought to the attention of the planning team.

For this purposes of this planning process, an "issue" is defined as a topic of controversy, dispute or concern over resource management activities or land uses within the planning area boundary. In order to be considered "significant" by the agency, an issue must be well-defined, relevant to the proposed action(s) in question, and within the authority and ability of the agency to address in the development of a reasonable range of alternatives or mitigation measures. The agency must consider the issue in the environmental analysis of the various alternatives.

Based on these factors, we have identified the following preliminary issues (below). These preliminary issues may be revised or refined as a result of comments received on this document. The issues have been organized under nine issue categories: Land Ownership, Transportation and Access, Land Uses, Ecosystem Health and Diversity, Recreation, Special Management Areas, Archaeological Resources, Public Health and Safety, and Social and Economic Values.

We identified Preliminary Alternatives using the same process as for Preliminary Issues. Given the information from previous public outreach for the Urban Interface Plan, and what is currently known about the existing conditions, uses, and conflicts, some reasonable estimates of the kinds of desired conditions and goals can be made. These estimates (Preliminary Alternatives) are described below in this section, and display a likely range of conditions, by issue category, that we expect to consider as we develop a range of alternatives. All alternatives must be within the scope of the decisions we propose to make (see Chapter 2), and meet the purpose of and need for action (see Chapter 1). The range of alternatives we ultimately consider in the Draft EIS will include:

- A No Action/No Change alternative that will describe continued management of the planning area under current direction;
- Actions "common to all action alternatives," for areas of common agreement or support;
- An undetermined number of alternatives that combine descriptions of desired conditions, goals, and objectives, by area and/or by resource. These will be grouped in a way to be responsive to a diversity of perspectives;
- A description of "probable actions" that could be implemented under a given alternative that will provide the basis for analyzing the environmental effects of the alternatives.

Following the general description of each Preliminary Issue and Alternative (below), are a list of preliminary Opportunities that may be included in one or more alternatives.

All Issues, Alternatives and Management Opportunities listed below should be considered preliminary, to be further developed in a collaborative method, using public comment generated by this AMS. See Chapter 6 for a description of the collaborative planning process.

[1]Scoping is a term used by the Council on Environmental Quality in their implementing regulations for the National Environmental Policy Act. The term includes actions such as soliciting public comment and other information gathering techniques that are used to establish the scope of the analysis for an Environmental Impact Statement.

Land Ownership

Issue Description

The population in central Oregon is increasing at a rate beyond both state and national averages and is projected to double in Deschutes County between 1990 and 2010 (Portland State University Center for Population and Census). This dramatic increase exceeds what the BLM expected when it prepared the 1989 Brothers/La Pine RMP. The replacement of large, sparsely populated ranches and farms by more densely populated subdivisions, mini-farms, and mini-ranches reflects this increase in population. In addition, many of the isolated private parcels of lands that are located within large blocks of public lands are being more intensively developed than in the past. At the same time, urban development is beginning to surround small, isolated blocks of public lands.

Increases in population have also driven an increase in the demands for land for commercial and residential use as well as urban infrastructure that was not anticipated by the RMP. The increase in demand has resulted in a rise in the value of lands available for development within the planning area. As demand for and value of available lands increases, the relatively low-value and currently undeveloped public lands are increasingly desirable as a source of land suitable for urban growth and urban infrastructure to support growth.

As development surrounds isolated BLM managed parcels, management for public benefits becomes increasingly difficult and expensive. There is the potential for the management of some parcels to become more closely akin to urban open space than traditional public land management. Even most large tracts of consolidated public land ownership within the planning area are surrounded by or interspersed with urban and rural residential development. In some cases, these lands provide important wildlife refugia, natural resources, or other public benefits, while in other cases the size, access and adjacent uses may limit those benefits. This increase in development of private lands, and increased recreational or casual uses on public lands also affects the ability of permittees to effectively or economically manage range allotments, prompting requests to examine opportunities for land exchanges to consolidate grazing uses.

Land ownership also affects land uses. Land sold or exchanged out of federal ownership may not necessarily continue current uses, thus affecting permit holders, recreational users, or Indian treaty rights or interests. In some cases, changes in the configuration of public and private lands within the planning area could facilitate improved land or resource management, or reflect a change in public priorities. Land ownership also affects public access by either limiting or expanding public access to public lands. Land ownership, and thus potential for use or development, can also affect limited natural resources such as minerals or ground and surface water and less tangible resources like scenery, open space and wildlife habitat.

The groundwater aquifer underlying the planning area is derived primarily from precipitation that falls in the Cascade Range located to the west of the planning area. Groundwater that originates in the Cascade Range is the major source of stream flow for the Lower Deschutes and Lower Crooked Rivers, and Lower Squaw Creek. Groundwater and surface water are directly linked, and removal of ground water may ultimately diminish stream flow (Gannett, et al., 2001). Lands currently managed by the BLM that are leased, sold, or exchanged into private or other public ownership, could require new uses of ground water resources and/or associated surface flows.

Lands that are currently in juniper and shrub steppe, or forested lands could be converted to a variety of other uses if sold or exchanged that could affect the amount and distribution of groundwater. Depending upon the amount required, removal of groundwater could poten-

tially reduce the amount of water in perennial and intermittent streams, including the Middle Deschutes, Lower Crooked, and Lower Deschutes Wild and Scenic Rivers, as well as the Middle and Lower Deschutes State Scenic Waterway (Gannett, et al., 2001). Reduction in groundwater may also have the potential to reduce the number of active springs and lessen the amount of flow emitted from spring sources. These effects on springs and streams could affect wildlife by reducing water availability, and aquatic dependent species such as fish, macroinvertebrates, and riparian vegetation. Conversion of native shrublands to uses where pesticides or herbicides are liberally applied may, in some areas, have the potential to affect groundwater quality.

Within the Little Deschutes sub-basin, groundwater quality in the La Pine region is at risk of nitrate contamination from on-site septic system wastewater discharge to groundwater (Deschutes County Environmental Health Division, et al., 1999)[2]. Recent land sales by the BLM to Deschutes County in the La Pine basin through the Regional Problem Solving effort sponsored by the State, were specifically geared to reducing the potential for development to affect these resources. Changes from public to private land ownership that could result in a need for additional septic systems could affect the nitrate levels in the groundwater in these areas. The Brothers/La Pine RMP did not consider the potential effects of land ownership changes on changes to the groundwater quantity or quality or consider new information concerning the potential for effects on downstream Wild and Scenic Rivers and State Scenic Waterways.

Alternatives

The alternatives will examine a range of desired conditions for land ownership patterns that would make public land available for sale, exchange, or lease:

- for community growth and infrastructure adjacent to major population centers;
- for community or rural residential recreation and open space;
- to block up private ownership for improved efficiency of public land management;
- to maintain or improve wildlife habitats and populations for all life stages.

The range of desired conditions will examine conditions/criteria for the acquisition of private parcels and the retention or transfer of ownership of public land parcels including identifying areas or parcels of lands that would be priorities for acquisition. Conditions and/or criteria for the retention or transfer of ownership of small blocks of land will be examined considering the availability of those lands for public purposes. The plan will examine long-term desired conditions under which public lands would be considered for lease to provide for recreational and other community facility needs. The range of alternatives will compare trade-offs between the economic, social, and other resource values represented by different land ownership patterns across the planning area and, where relevant, to the central Oregon region.

Opportunities

- Identify government and community needs for BLM-managed lands and parcels that may be available for transfer to meet public need.
- Identify mutually beneficial boundary or parcel adjustments with adjacent land owners.

[2]Deschutes County Environmental Health Division, U.S. Geological Survey, and Oregon Department of Environmental Quality, 1999. La Pine National On-Site Wastewater Treatment and Disposal Demonstration Project.

- Identify parcels with specific/special resource values or legal encumbrances which must be retained or require special agreements for the protection of those values or encumbrances should they be transferred.

- Identify habitat types or plant communities that are important to maintain in or acquire for public ownership.

- Provide opportunities for public access to isolated BLM parcels that are currently inaccessible, such as at Powell Buttes, through easements, land exchanges, or land tenure designations.

- Establish a list of disposable public lands. Develop a means to weigh the values of small public parcels for selection for retention or transfer and prioritize these parcels according to desirability.

- Identify geographic areas of private lands desirable for acquisition, including high priority lands to acquire within and adjacent to Wild and Scenic Rivers. Develop criteria to evaluate the values of small private parcels for acquisition, and prioritize these parcels according to desirability.

- Identify high priority private lands within/and corridors for exchange or purchase into BLM managed lands.

- Identify public lands suitable or with high potential for lease or sale to qualifying agencies or private groups under R&PP.

- Identify similar uses that could be combined to reduce the overall leasing or sale of public lands.

Transportation and Access

Issue Description

As private land development increases in proportion to growth, or as communities express needs to improve economic stability or growth with transportation infrastructure, BLM-managed lands are increasingly being identified as necessary or desirable locations for transportation corridors. These corridors include both regional (inter-county or intra/interstate transportation), and local (important to intra-county or primary access points to public lands) sites.

The potential for increased traffic volumes on US Highway 97 from international sources such as Canada and Mexico, on State Highway 126 and the Powell Butte Highway from commuters between Prineville, Bend and Redmond, and general growth within the area has also increased demands on public lands to provide raw materials for highway construction, wider roads to accommodate extra vehicles beyond widths provided in current ROWs, and realignments outside of the current ROWs.

In some cases, jurisdiction over certain roads is not clear. Roads within the BLM-managed lands within the planning area are not all solely under BLM jurisdiction. Many of the roads in the area were initially developed by early pioneers and settlers. Jurisdiction in many cases may belong to the Counties, but may not be identified in their long-term transportation plans, making management of a local transportation system by the BLM difficult.

In some areas, BLM-managed lands in the planning area are readily accessible from a multitude of access points. Numerous access roads leading into public lands are concentrated in a single location, at a density far beyond what is necessary for public access. Many of these road intersections may be in unsafe locations for entry and exit from paved roads that are experiencing increased daily traffic levels. None of these road and trail access points to public lands have been identified in the Brothers/La Pine RMP. In other areas, access to public lands are only accessible if visitors trespass across private lands. An increasing number of access points to public lands are being blocked by private development.

A specific road network or standards for road density, road locations, and road maintenance were not identified in the Brothers/La Pine RMP. Many locations in the planning area have dense and confusing road networks. In addition, many large blocks of BLM managed public lands within the planning area have been closed to motorized use through "emergency" closures (Smith Rock area, Mayfield Pond, portions of Cline Buttes), which have gone beyond the emergency status. Motorized uses adjacent to developed private lands have resulted in complaints about unmanaged transportation networks on BLM managed lands. In some cases, road maintenance on BLM managed lands may not be sufficient to meet changing standards for public safety needs for evacuation of subdivisions or communities during fires.

The BLM is required under law to provide access to private in holdings if no other access is available. In addition, county zoning regulations, safety requirements, and historic rights can influence which of rights-of-ways the BLM considers. Private in-holdings within the planning area are being developed more rapidly and intensely than in the past, and it is reasonable to assume, given current growth projections, that available land will be developed to the extent permitted by zoning, thus requiring multiple grants of new rights-of-way. At current rates, the remaining vacant parcels within the planning area (about 14) will probably be developed in the next 7-10 years. After which requests for in-holding rights-of-way can be expected to decline. Additional divisions of existing parcels may require extensions of existing ROWs, but these are less likely to be on BLM managed lands. The Brothers/La Pine RMP did not anticipate the demand for ROWs nor the effect of potential uses and access on wildlife habitat or other natural resources.

The demand for electricity, natural gas, and other energy sources and new forms of digital communication has increased. Additional demand for new or expanded utility corridors not anticipated by the Brothers/La Pine RMP has already been realized and can be reasonably expected to increase. At the same time, an increased awareness and importance of scenic values has created conflict over the siting of communication structures within the area. Utility corridors, because of their linear nature and relatively easy vehicular access, also attract off-road driving activities, illegal dumping, and vandalism to utility structures. The Brothers/La Pine RMP does not address these kinds of conflicts or provide for their consideration in terms of site decisions.

The alternatives will examine long-term desired conditions for a variety of transportation systems designed to consider the inter-connectivity of those systems with other jurisdictions, systems granted by legal authority or obligation, and systems granted under other authorities. This gives land managers the latitude to consider conditions and criteria for approval of rights-of-way to interconnect the network of private and public tracts to provide for utility and communication corridor needs. The range of alternatives will examine both regional and primary local transportation systems across the planning area, and will examine the long-term desired conditions for establishing new or expanded rights-of-way for utility corridors or communications sites. The following sections describe the range of alternatives and opportunities more specifically concerning regional and local transportation systems, rights-of-way, easements, and utility corridors and communication sites.

Regional Transportation Systems

Alternatives

The range of alternatives will examine the suitability of areas to provide for new or relocated regional transportation corridors and/or improvements within existing corridors considering tribal, federal, state and local government needs, wildlife habitat fragmentation, and effects on public land users.

Opportunities

Identify needs for regional corridors including:

- U.S. Highway 97 between Bend, Redmond, and Madras.
- State Highway 126 where it crosses the Redmond Airport runway protection zones, and between Sisters and Redmond.
- Between Prineville and State Highway 20 to change the existing State Highway 27 location.
- Provide for the safe and timely transport of the public at a reasonable cost.
- Maintain or enhance economic opportunity for Central Oregon communities.
- Establish conditions to consider long-term transportation needs of tribal, federal, state, and local governments and local communities when evaluating individual transportation and right-of-way requests.
- Identify back country byways.

Local Transportation Systems

Alternatives

The range of alternatives will examine local roads within the planning area, focusing primarily on the BLM-managed primary arterial and collector transportation system, but also on local transportation corridors needed to address growth and capacity concerns by local communities. The alternatives will identify conditions and/or criteria by which BLM-managed roads not classified as part of the primary system would be evaluated in the future to determine whether they would be included into the transportation system as local roads, or dropped from the designated transportation system (decommissioned). The range of alternatives will also examine long-term desired conditions for integration with local and regional transportations systems under other jurisdictions.

Opportunities

- Identify local transportation corridors that would alleviate capacity pressures on the Yew Street interchange near Redmond.
- Use results of the joint Forest Service - BLM roads analysis process to provide the basis for identifying a long-term open public road system.
- Integrate long-term transportation plans between jurisdictions.

- Identify county arterial and collector system roads and desired maintenance levels.
- Identify safe access/exit points for motor vehicles on BLM managed lands onto paved public roadways.
- Identify emergency exit/access needs of new and existing subdivisions and resorts.

Rights-of-Way and Easements

Alternatives

The alternatives will examine long-term desired conditions for rights-of-way (ROW) grants to complement the existing and projected local and regional transportation system and other uses or resource needs, overlap grants in the same area, and project reasonably foreseeable future needs. The range of alternatives will examine opportunities to treat existing and proposed transportation corridors as focused use areas, confining as many compatible uses as possible within the corridors to minimize fragmentation to wildlife habitat and recreational uses. The range of alternatives will also examine conditions and/or criteria under which easements through private lands to access public lands would be considered, and identify likely parcels for easement acquisition.

Opportunities

- Establish conditions to combine or co-locate complimentary ROWs.
- Identify areas for projected or highly probable ROW requests.
- Provide for complimentary rights-of-way to occupy the same or an adjacent existing ROW.
- Identify conditions where existing ROWs would be abandoned such as when combined with other compatable uses or use terminated.

Utility Corridors/ Communication Sites

Alternatives

The alternatives will examine the conditions under which utility corridors would be managed, expanded or designated considering energy, communication, domestic water, sewage and related access needs, and noxious weed potential. The alternatives will also examine long term desired conditions for vegetation, and examine suitable locations for new corridors or sites considering factors such as ACECs, cultural, geologic, scenic, aesthetic, or other public values.

Opportunities

- Update cooperative long-term desired conditions for vegetation within utility corridors.
- Identify the role of utility rights-of-way in the public transportation system.

Land Uses

Issue Description (general)

BLM managed lands are used for a variety of purposes, both commercial and non-commercial. These uses are highly valued by the public for many reasons. The lands provide social as well as economic value to the local, regional, and national population. As the private lands are more densely developed, people must share public lands with other users and increasingly with nearby residents on both a permanent and part-time basis. Often, this presents conflicts between uses and users. Unsightly, noisy, dusty, odoriferous activities, or activities perceived as threatening have become the source of an increasing number of complaints by the public. Urban and rural residents adjacent to public lands have increased concerns about activities such as dumping, shooting, OHV use, or trespass on private lands, while public land users are increasingly concerned about the influence of adjacent land owners and newcomers on more traditional uses. The Brothers/La Pine RMP did not anticipate the level of demand or potential for conflict between uses resulting from the current rate of growth within the planning area.

The following descriptions provide more detail about the nature of this issue for uses such as those associated with areas of traditional cultural significance for recognized Indian tribes, livestock grazing, commercial forest product uses, mineral and energy resources, rights-of-way including utility corridors and communication sites, and other permitted or leased uses such as the Oregon Military Department's training area. Permitted recreation uses, including outfitter-guide and special recreation events, are described under the Recreation issue.

The alternatives will examine, by resource or by area, different criteria that would determine how or whether certain uses would be permitted, or by which conflict between users or uses would be reduced or eliminated. These are likely to include conditions as described below.

Visual Resources

Issue Description

Population growth and subsequent development within the planning area is expected to increase the variety of applications for permits for activities that have the potential to affect visual resources such as signs or advertisements, power plants or electrical transmission lines, material sites, water tanks, or cellular phone towers. The Brothers/La Pine RMP does not address public viewsheds or viewpoints that have developed within the past 10 years, nor does it address new policy for visual quality objective designations within Wilderness Study Areas. Brothers/La Pine RMP guidelines do not consider management actions such as vegetation or fuels treatments that could affect visual quality.

Alternatives

The RMP will examine different visual quality objective designations for BLM-managed lands within the planning area.

Opportunities

- Identify important visual features within the planning area
- Designate special management areas to emphasize visual resources
- Identify rehabilitation needs for abandoned mineral sites

- Identify lands that contribute to important visual qualities that could be acquired into public ownership

Areas of Traditional Cultural Significance

Issue Description

A key issue pertaining to areas of traditional cultural significance is how to reconcile conflicts of prior existing rights versus escalating public land use demands with the agency's conservation mission. For the Upper Deschutes planning effort, areas of traditional cultural significance may be defined as places situated at various locations and elevations across the landscape where local Indian people hunt, fish, pasture livestock, collect roots, berries, medicinal herbs or plants for utilitarian purposes, and practice traditional religious beliefs. In view of that consideration, many tribal communities view such areas, and the activities that occur there, as possessing some of the most important elements for maintaining the cultural values and beliefs that define who they are as a people. In some cases, the use of those areas is protected by prior existing legal rights, treaties, and other means.

Currently, there are no specific goals or objectives in the Brothers/La Pine RMP related to identifying areas of traditional cultural significance and little agency knowledge about their location and importance to contemporary tribal populations. Yet, those areas could be inadvertently affected by management actions operating under the best of intentions due to road gating or rehabilitation, weed control, fire management, recreational development and/or enhancement and land disposal.

Road gating and/or rehabilitation could discourage or deny Indian people access to areas of traditional cultural significance. Weed control could inadvertently damage or destroy populations of roots, medicinal herbs and plants used for utilitarian purposes. Fire management could cause temporary damage to root populations and permanently affect sacred sites. Actions related to development and enhancement of recreational values could diminish native plant populations, displace wildlife, and/or detract from the private nature of sacred sites. Land disposal, would remove public lands from federal jurisdiction and effectively deny Indian people access to areas of traditional cultural significance that may have existed on those lands.

Alternatives

The range of alternatives will examine conditions for local American Indian Tribes to freely participate in activities on public lands that are of traditional cultural significance.

Opportunities

- Promote continued working relationships with local Indian tribes.
- Identify and document areas of traditional cultural or religious significance in coordination with local Indian tribes.
- Provide access to areas of traditional cultural or religious significance to local Indian people when areas have been temporarily or permanently closed.

Commercial Forest Use

Issue Description

An insect epidemic and subsequent salvage harvest has changed the forest structure, habitat, and fuels profile in the La Pine portion of the Brothers/La Pine RMP since the RMP was completed in 1989. As a result, some decisions and management direction in the RMP guiding forest management are no longer valid. At the time of the RMP, forestry decisions were based on four primary objectives: 1) reduction of extreme fire hazard; 2) salvage of dead and dying timber; 3) successful reforestation; and 4) increasing subsequent growth of commercial tree species. All four of these objectives have been accomplished to some degree and continue to be important components in the face of growth in the area and the dynamic nature of the environment.

New information indicates that a new focus is needed in the RMP to address updated BLM - wide objectives for forest health, fire hazard, and wildlife habitat. Current management direction and scientific findings from the Interior Columbia Basin Ecosystem Management Project indicate that goals focused on healthy forest and rangeland conditions with sustainable outcomes resulting from those conditions are important to provide more stable natural resource-based economies. The Brothers/La Pine RMP does not reflect projected commercial forest product outcomes based on a comprehensive, ecosystem approach that considers biodiversity, special status plant or wildlife habitat, general habitat connectivity, the role of old growth juniper, scenic values, or strategies for continued urban interface fuels treatments and insect and disease management.

The Brothers/La Pine RMP did not consider the role of historic or natural disturbance regimes and the role that they play to maintain vital ecosystem functions, nor address the relationship of forest management to these long-term desired outcomes. The Brothers/La Pine also did not recognize the degree to which natural forest habitats would be limited by the population growth within the area, or the importance of these shrinking habitats to wildlife populations and public use.

Alternatives

The alternatives will examine the conditions under which conifer forests could be managed to promote healthy ecosystems, a safe environment for residents, regionally important old-growth species in the central Oregon landscape and provide marketable or beneficial forest products. Alternatives will be integrated with the “ecosystem health and diversity” alternatives.

Opportunities

- Continue to manage commercial forest for production of forest products where compatible with ecosystem health, fuels reduction, and resource sustainability objectives.
- Consider the use of public and commercial firewood operations in the juniper woodlands and pine stands to achieve thinning and other resource objectives.
- Develop policy for collecting vegetative products on a sustainable basis, both for commercial and personal use. Consider native American traditional use areas.
- Explore opportunities for allowing adjacent private landowners to treat BLM lands for fire protection and hazard trees. Personal-use firewood permits could be used as a tool to reduce hazardous fuels.

Minerals

Issue Description

The high growth of the communities in central Oregon have led to an increased demand for the use of mineral resources, particularly crushed aggregate, within the region. Public aggregate sources available to the State or private contractors within the area have been depleted due to the high demand. Local communities and State agencies have looked to BLM-managed lands within the planning area to meet this demand. Greater availability of public aggregate sources would potentially increase the competition for road construction contracts by eliminating the need to rely solely on existing private sources. This increased competition would be expected to reduce the cost to taxpayers for many of the anticipated large road construction contracts in the region. Recently the Oregon Department of Transportation (ODOT) initiated a study within the planning area to identify potential sources of aggregate within the region. The ODOT is constantly looking for high quality mineral resources located on both private and public lands, including BLM lands within the planning area. ODOT is looking for sources of material that are economically viable in that they will provide benefits to the taxpayers of Oregon, via reduced project costs obtained through lower development cost and shorter haul distances. Numerous local residents and recreational users raised objections that highlighted the Brothers/La Pine RMP did not take into consideration the scenic or recreational values of the lands open for mineral uses, and did not anticipate the effects (dust, noise, increased traffic) of those uses on an increasing number of rural residents.

Alternatives

The range of alternatives will examine the conditions under which mineral extraction would be permitted or withdrawn, consider factors including conflicts with recreation, residents, scenic, cultural, geologic or other values. The alternatives will also examine the criteria for site rehabilitation or change in land ownership.

Opportunities

- Work with other agencies to develop a regional approach to saleable mineral pit locations and development.
- Identify the standards to which mineral locations will be rehabilitated for future non-mineral uses.
- Identify areas of potential conflicts with recreation, private landowners, air quality, scenic, cultural, geologic or other values with mineral extraction.
- Identify those areas where mineral development should not be considered due to conflicts with recreation, residents, scenic, cultural, geologic or other values.

Livestock Grazing

Issue Description

The Brothers/La Pine RMP made decisions about forage allocation and areas available for livestock grazing based on resource condition that, for the most part, are substantially unchanged. The Brothers/La Pine RMP did not, however, anticipate the current high level of conflicts between public land livestock grazing, and uses on public and adjacent private land, and thus provided no guidance for the resolution of these conflicts.

Increased urban development next to public land and increased recreational and other uses on public land have led to conflicts between these uses and public land livestock grazing. Concerns are voiced more frequently than in other less densely populated areas within the Prineville District, and vary from safety issues (stray cattle on busy public roads) to aesthetics ("cowpies" at popular recreation areas or next to private land) to economics (labor costs to continually check gates in popular recreational areas). Visitors to public land sometimes leave gates open, cut fences, shoot or otherwise damage troughs or pipelines, or harass, rustle, or kill livestock. Some individuals and groups have asked the BLM to consider eliminating grazing in specific areas.

The Standards for Rangeland Health and Guidelines for Grazing Management ("S&Gs," BLM 1997) refined the process by which allotments are periodically evaluated to assure rangeland soils, vegetation, and wildlife are healthy or that conditions are improving. The S&Gs can be used to identify physical and biological issues, but used alone they are not useful in supporting changes to resolve social issues arising from conflicts between human uses of public land.

While for the most part the Brothers/La Pine RMP's natural resource decisions remain sound, there are a few changes that need to be made to the livestock grazing program guidance. Some grazing management goals do not reflect the current level of knowledge about managing for rangeland health, and the proposals for livestock grazing systems and rangeland developments (including standard operating procedures and specific guidelines) are too prescriptive to allow for adjustments due to new information or special circumstances. Forage allocation in the La Pine portion of the planning area may need to be adjusted to account for the transitory nature of forage in forest environments.

Alternatives

The alternatives will examine a range of "conflict" thresholds, with the goal of reducing conflicts between livestock grazing and other uses and activities on or adjacent to BLM managed land within the planning area. Some of the alternatives will lead to actions that reduce or eliminate livestock grazing to reduce conflicts, while other alternatives will result in changes to other uses or activities. The desired conditions will span a range of levels of conflict between uses and users and would identify criteria to determine which uses or actions need to be modified. Criteria may include such things as amount of recreational use, number of residential lots per unit of public/private boundary, or amount and degree of vehicle use on public access roads and highways within or adjacent to the allotment.

Opportunities

- Modify season of livestock grazing or eliminate livestock grazing in popular recreation areas.
- Close roads or areas seasonally or permanently to some recreational uses when there are conflicts with livestock grazing.
- Reduce or eliminate grazing in areas where fences along busy/fast roads are likely to require frequent maintenance.
- Consider presence and use of area by livestock when establishing criteria for or approving utility or transportation rights-of-ways and/or easements or recreational uses.

Use Authorizations

Temporary Use Authorizations

Issue Description

The District receives numerous, and often repeated requests for temporary use authorizations for activities such as photography, commercial filming, or educational purposes. There is no current procedure for streamlining these requests nor does the Brothers/La Pine RMP identify areas where these activities may be preferred or discouraged based on other resource needs.

Alternatives

The alternatives will examine conditions for a smooth and timely process to obtain permits or leases in areas where requests are often concentrated and granted.

Opportunities

- As is done with mining permits for community pits, identify areas of recurring or continued use by photography and other like low impact permitted uses and establish appropriate zones or use areas.

- Preestablish conditions for issuing permits for the purpose.

Oregon Military Department and National Guard

Issue Description

Military training was established by the US army in the late 1930s and is continued by the Oregon Military Department (OMD) and National Guard through the present. Currently, the BLM has granted a permit to the OMD to carry out training exercises on the BLM-managed lands adjacent to the Biak Training Center south of the city of Redmond and Highway 126, east of Highway 97, and north and west of the Powell Butte Highway. The mission of the military is to remain in a state of preparedness in support of state and national security interests, and these lands contribute an important component to fulfilling that mission.

There is also an increasing demand for other uses in that same area that encroach upon or may reduce the usable area available to the military to meet their purposes. The OMD is currently finalizing an Integrated Natural RMP that will help to guide their activities within the permit area. This plan could need to be modified if the permit area changes, or if conditions outlined in the Upper Deschutes RMP change the area available for training.

Alternatives

The alternatives will examine a variety of conditions under which continued military uses of the planning area would be permitted. This would include criteria by which either the military or other uses within their permit area could be altered to reduce or eliminate conflicts between users.

Opportunities

- Where appropriate, incorporate the Biak Integrated RMP to guide future military mission intent.

- Identify alternative areas within the vicinity of the Biak Training Center that could be used for training activities.

- Establish conditions under which military training exercises could be conducted outside of the permit area.

Unauthorized Occupancy and Use

Issue Description

Unauthorized occupancy and use of BLM managed lands can occur as a result of lack of clear boundary locations or other situations. These unauthorized or illegal uses can result in damage to natural resources that require restoration. The Brothers/La Pine RMP provided limited guidance for how to prioritize damage to resources or any standardized approaches to quickly achieving restoration of resource damage.

Alternatives

The alternatives will examine long-term desired conditions to prevent trespass and to prioritize, and, where possible, standardize site restoration techniques to be used.

- Identify priority needs for survey support to locate boundaries to avoid potential tresspass.

- Develop partnerships and work with surveyors, cable operators, electric companies, sheriffs departments, and other like groups to provide for the early exchange of information when unauthorized occupancy or use is detected.

- Develop management guidelines for ensuring soil and vegetation at these sites are restored.

Ecosystem Health and Diversity

Issue Description (Vegetation)

Although not addressed in the Brothers/La Pine RMP, concerns have been expressed over the increasing urban development and human impacts which have resulted in the fragmentation of old-growth juniper woodlands in Central Oregon. Historic public land uses such as homestead clearing, and illegal activities, such as, cutting trees for firewood and dumping trash, continue to threaten the integrity of old-growth juniper stands. Old-growth juniper woodlands are important for wildlife habitat, biological diversity, and scenic values. Previous and ongoing human impacts on old-growth juniper make the remaining old-growth juniper woodlands on public lands more ecologically significant.

Ecosystems within the Upper Deschutes Planning Area have evolved over time in response to periodic fire disturbance, and sustainable ecosystems are in balance with the inherent frequency, size and severity of the natural disturbance cycle. Many acres within the planning area have missed one or two disturbance cycles due to management. The vegetative response to this disturbance deficit is a change in species presence or prominence, and fuel quantity and continuity. The Brothers/La Pine RMP recognized fire's role in the ecosystem and established risk classes that provided guidance for fire suppression and fuels treatments.

However, the Brothers/La Pine RMP does not fully consider the habitat needs of newly established special status or emphasis species such as sage grouse and other sagebrush obligates. In addition, human expansion and increased recreational use have added new

emphases on ecosystem sustainability and health, and the previous risk classes may no longer be representative of the conditions in the planning area. Decisions on vegetation management for ecosystem health must include a measure of sustainability, including number of disturbance cycles missed and the departure from species composition, structure, and fuel loading found under a properly functioning disturbance regime.

Issue Description (Wildlife)

Wildlife populations that are not federally listed under the Endangered Species Act within the planning area are managed by the State of Oregon. However, both BLM-managed public lands and National Forest lands contribute an important component of the landscape that provides for the healthy and diverse populations the state enjoys. The planning area includes populations of large carnivores like cougar and coyote; and big game, including elk, mule deer, and pronghorn antelope. The planning area contains or has the potential habitat for species listed as Threatened under the Endangered Species Act (ESA), including the bald eagle and Canada lynx; one species that has been de-listed under the ESA, the peregrine falcon; and two species identified as Candidates for listing under the ESA, the Columbia and Oregon spotted frogs. In addition, the area provides habitat for 15 "Species of Concern" identified by the BLM (See Area Profile for listing, Chapter 3); and a variety of rodents, bats, and birds. The planning area provides or has the potential to provide a variety of wildlife habitat components including reproductive, dispersal and migratory habitats that vary from mixed conifer, to juniper woodland. It provides important habitat connectivity between the Deschutes and Ochoco National Forests and the Little Deschutes, Deschutes, and Crooked River systems. There is potential habitat for species such as the bighorned sheep, which once populated portions of the planning area. In the process of urban expansion, habitat connectivity can be reduced or eliminated, affecting genetic exchange between populations. In addition, reductions in effective habitat increases the importance of remaining suitable habitat for all species, indicating a need to examine the uses and emphases in those areas. The Brothers/La Pine RMP did not identify goals for managing these habitats.

The Brothers/La Pine RMP did not consider the conditions needed to support habitats for the variety of species that exist or have the potential to inhabit the planning area, nor did it reflect the habitat contributions of expansion of the rural and urban private land uses within the area. In many cases, conversion of the land from native dry-land shrubs to irrigated agricultural or rural residential uses provides an increase in the forage base or attractants such as water sources for those species more adaptable to interact with humans.

Additional information identified as a part of the scientific assessment for the Interior Columbia Basin project about the importance of shrub habitats to bitterbrush or sagebrush-obligate species, such as sage grouse and neotropical migratory birds was not addressed in the Brothers/La Pine RMP. Throughout their range, reduction in appropriate quantities and quality of shrub habitat to support various life stages of shrub-obligate species has increased concern over the ability of those species to resist downward trends in populations. Increased human presence affects these and other terrestrial species and their behaviors by altering habitats. Conversion from native shrubs to agriculture or other non-native vegetation can substantially change the local climatic conditions or change species distribution on a landscape scale, thus indirectly affecting a broad number of species.

Although population management goals for species such as mule deer, pronghorn antelope and elk were identified in the Brothers/La Pine RMP, habitat capabilities or vegetation management goals were not integrated into those goals. Habitat capabilities reflected by changes in adjacent land uses, dispersal and reproductive needs were not identified in the Brothers/La Pine RMP. In addition, "old" terminology such as "crucial habitat" is no longer used. New information on population numbers, movement patterns and habitat needs indicate the goals and objectives of the Brothers/La Pine RMP may not be consistent with current population needs or overall habitat capabilities.

For sage grouse, the Brothers/La Pine RMP identifies goals and objectives for nesting areas around leks, but does not address the location and importance of wintering habitat. Both sage grouse and antelope, within the planning area, are considered to be on the fringe of their ranges.

Issue Description (Water Quality and Quantity)

The dominant hydrologic features in the planning area are the Deschutes River, Crooked River, and Little Deschutes River. Portions of these rivers are federally designated Wild and Scenic River (The Upper Crooked, Lower Crooked, and Middle Deschutes Rivers), and are currently covered by those management plans. These rivers, as well as other streams within the planning area, have been listed by the Oregon Department of Environmental Quality (ODEQ) as water quality limited (See Area Profile, Chapter 3). Reduction in riparian vegetation through historic timber harvest and livestock grazing, alterations in channel morphology, and water diversions that reduce stream flows have resulted in many of the streams within the planning area not meeting the State water quality standards of stream temperature, dissolved oxygen, pH, sedimentation, turbidity and bacteria. The State standards are based on the beneficial use of fisheries. Not meeting the standard may affect the health of the aquatic ecosystem. The listing of streams as water quality limited by the ODEQ is a new activity, and, therefore, was not addressed in the Brothers/La Pine RMP.

The Interior Columbia Basin Ecosystem Management Project identified a link between changes in disturbance regimes to vegetation cover, and between vegetation cover and composition to upland watershed health. A rapid increase in juniper stand establishment occurred during a period of favorable climatic conditions and reduced fire frequency and intensity (Gedney, et al., 1999).[3] Juniper successfully out competes other vegetation for available moisture, resulting in reduced understory vegetation in open areas adjacent to juniper trees. Juniper stands in densities and locations outside of the range of historic variability, as well as activities such as off-road vehicle use, grazing, and horseback riding may reduce ground cover, create ruts, and compact soils. As a result, overland flow is increased and water is concentrated in vehicle ruts causing a reduction in infiltration of water and flashier flows within intermittent and ephemeral stream channels. These higher flows cause channel scour and streambank erosion, while decreased infiltration causes shorter flow durations for intermittent streams. Reduced periods of time that water remains in the channel affects the potential for riparian vegetation and reduces the amount and location of source water for wildlife. Sediment derived through overland flow and in-channel erosion in turn contributes to downstream sedimentation of perennial waters. The degree to which upland activities affect water quality and quantity is determined by the spatial relationship of these factors to the stream systems. Currently, it is not known to what extent upland activities are affecting the hydrology of the area. The Brothers/La Pine RMP did not consider the relationships of these conditions to hydrologic systems.

Alternatives

The range of alternatives will examine a variety of conditions that would restore and support healthy ecosystems in conjunction with expected population levels and human uses, wildlife habitat needs, and economic reliance of the population on public lands. The conditions will include or incorporate management direction, biological opinions, and conditions suggested by the Interior Columbia Basin Ecosystem Management Project Scientific Assessment such as

- riparian habitat conservation strategies,
- identification of important source habitats and high priority restoration watersheds,

[3]Gedney, Donald R.; Azuma, David L.; Bolsinger, Charles L.; McKay, Neil. 1999. Western juniper in eastern Oregon. Gen. Tech. Rep. PNW-GTR-464. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 53p.

- evaluation of historic vegetation components and disturbance regimes when making landscape-level vegetation management decisions,
- conditions under which western juniper is not considered the desirable dominant plant, including consideration of the potential for soil erosion given soil, aspect, elevation and slope; wildlife habitat and recreation desired conditions,
- current guidelines for management of sage grouse,
- recovery plans for bald eagle, and
- identification of important wildlife connectivity habitat.

The range of alternatives will examine the conditions under which fire would play a role in ecosystem management, the role of human disturbances, and the historic role of natural disturbances. The alternatives will incorporate results of the current on-going joint water quality restoration/total maximum daily load plan being prepared with ODEQ and the Forest Service.

Opportunities

- Develop criteria for deciding when and where ground-disturbing land uses (such as off-road recreation, new ROWs, commercial activities) are appropriate considering needs for protection, mitigation, and restoration of important plant communities, wildlife habitats, and sensitive species.
- Develop a long-term treatment program for overstocked pine stands in the La Pine area and other areas for long-term forest health and urban interface fire protection.
- Develop a vegetative management strategy to accomplish ecological, watershed health, and other resource goals. Develop criteria to use for deciding when and where certain vegetative treatment(s) will be used, including mechanical thinning, and prescribed fire.
- Inventory old-growth juniper and identify a management strategy to integrate its management with other land uses. Consider opportunities for designation of an ACEC based on old-growth juniper values.
- Use integrated weed management techniques for noxious weed detection, prevention, containment, and control. All ground-disturbing actions would consider weed management in approval, design, implementation, monitoring, and follow-up actions. Partner with adjacent public agencies and private neighbors to develop regionally effective and cost-efficient weed management strategies.
- Establish criteria for rehabilitating disturbed areas from past management actions or illegal activity. Rehabilitation could include scarification, recontouring, seeding/planting native grasses, shrubs and trees, and mulching. Examples of possible rehabilitation sites would be: closure of surplus roads, old mine sites, undesignated OHV mud bogging areas, dump sites, trespass sites.
- Restore the extent and diversity of wet and moist meadow and riparian plant communities using techniques such as burning, cutting encroaching trees, grazing management, and controlling water flow regime.
- Identify areas with high potential for the presence of special status plants or plant communities and develop management guidance and actions to protect these plants and plant communities. Where possible, practical and in concert with other resource values, include these plants in designated ACECs.

- Provide special management/protection for special status plant species and plant communities. As part of this protection, prepare and implement Conservation Agreements/ Strategies for special status plant species.

- Incorporate the results of the Little and Upper Deschutes Water Quality Restoration and Total Maximum Daily Load plans currently being prepared jointly with ODEQ, USFS, and the Upper Deschutes Watershed Council.

- Establish criteria for management actions to maintain and/or enhance important wildlife habitats and populations, including species such as bald and golden Eagles, sage grouse, mountain quail, bats, reptiles, amphibians, and neotropical migratory birds.

- Designate Bald Eagle Management and Conservation Areas in collaboration with adjacent National Forests and Bureau of Reclamation lands.

- Determine important use areas for changing populations of deer, elk, and antelope.

Recreation

Issue Description (General)

Recreation use is increasing throughout lands administered by the BLM in the Upper Deschutes Planning Area. Both the levels of recreational use and diversity of activities has increased, often resulting in conflicts between recreationists, or between recreationists and adjacent landowners or permittees. Historic public uses such as target shooting and OHV activities have resulted in increasing complaints from landowners or other recreationists, particularly on smaller, isolated parcels of BLM land within the urban interface. Increasing levels of recreational use, particularly during the winter months, has raised concerns about effects to wildlife populations and habitat. The Brothers/La Pine RMP did not anticipate the effect that growth within the planning area would have on physical, social, or managerial settings and related recreational opportunities. The Brothers/La Pine RMP did not consider the explosive growth of the area and the demands now being made on the undeveloped, primitive sites used by the public on BLM managed lands. The following describes in more detail the issues related to developed recreation sites, and motorized and non-motorized dispersed uses.

Developed Recreation

Issue Description

Developed sites are generally campgrounds or other facilities that provide public services such as toilets, picnic tables, or garbage service. With the exception of campgrounds along the Crooked River south of Prineville, there are no BLM-managed developed sites on within the planning area that fully meet this criteria. Sites near water, such as Mayfield and Reynolds Ponds, or trailhead or staging areas for more elaborate trail systems such as the Millican OHV trail system, come close to meeting this definition. Other sites operated under permit or lease by other recreational providers, such as the La Pine State Recreation Area, shooting ranges or golf courses, also provide for some of these recreational demands. Typically, demand for these types of facilities increases with the population growth rates experienced in this region.

The Brothers/La Pine RMP did not establish goals or guidelines for development of recreation sites to respond to changing demands within the urban interface, either from BLM

supplied recreation facilities or through the use of Recreation and Public Purposes Act (R&PP) leases.

In some specific instances, BLM lands in the urban interface are adjacent to heavily used State Park units, such as Smith Rock State Park. The BLM managed lands are experiencing high levels of use similar to those at the adjacent State Parks. The Brothers/La Pine RMP did not consider the increase in recreational use adjacent to State Park units. There is a lack of consistency between BLM and State Park management of adjacent areas. This lack of consistent management and policy has led to visitor confusion and resource damage in these areas. Boundaries between the State Park units and BLM do not relate to patterns of public use or identifiable features on the ground. The Brothers/La Pine RMP did not provide guidance or management policy for identifying conditions under which developed sites could be pursued by either BLM or through other permit or lease mechanisms to meet resource protection and public demand needs.

Alternatives

The range of alternatives will examine the long-term desired conditions under which developed recreational facilities on BLM-managed lands would be considered with regard to projected recreation preferences and levels of use, protection of resources affected by dispersed uses, facilities provided by other recreation providers in the area, and the overall role of BLM-managed land in providing developed recreation experiences. The plan will examine long-term desired recreational settings at existing developed sites such as Mayfield and Reynolds Ponds.

Opportunities

- Identify priority actions and improvements such as road maintenance, fencing, changes in the cross-section of ponds, picnic area facilities, toilets and other improvements considering interim Wilderness Study Area management policy where appropriate.
- Identify criteria for reducing conflicts between uses and users such as grazing and target shooting and recreational day use.
- Identify partnerships to assess the kinds of developed facilities to be provided by BLM and other agencies, local governments, and private organizations to meet the needs and demands of the recreating public.
- Identify potential for using permits or R&PP leases to provide facilities under other agency or non-profit organization management, where appropriate.

Motorized Use

Issue Description

The levels of OHV use have increased in the planning area. The Brothers/La Pine RMP provided some direction for future clarification of OHV policy in “limited” areas. Many of these areas with “limited” classification in the Brothers/La Pine RMP did not undergo any further planning, and therefore have essentially remained open for unmanaged OHV use. This has resulted in conflicts between recreationists and landowners. It has also resulted in the spread of additional roads and trails within the planning area with resulting impacts to wildlife, soils and plants. OHV use on BLM lands in the planning area is somewhat seasonal in nature, and there is a shortage of trail riding opportunities in the winter. Winter riding opportunities at existing trail systems are limited by seasonal closures to minimize disturbance to wildlife, leaving many recreationists without opportunities or dislocating them to undesignated and unmanaged areas. Many small isolated parcels within the planning area are classified by the Brothers/La Pine RMP as being “open” to OHV use, although they are

not legally accessible to the public. In other cases, small parcels that are open to OHV use have resulted in repeated complaints from adjacent landowners.

Alternatives

The range of alternatives will examine the long term desired conditions for areas within the planning area that would be"open," "limited", or "closed" to OHV use. The alternatives will examine conditions where joint or segregated motorized and non-motorized uses would be considered into the future, and the conditions under which those activities would be conducted.

Opportunities

- Integrate interim emergency OHV closures to meet resource protection needs and recreational use goals.
- Identify criteria for resolving conflicts between motorized uses on small, isolated BLM parcels that are currently designated as "Open" in rapidly growing residential areas.
- Provide further definition and implementation criteria for areas currently designated as "Limited" for which no designated transportation system exists.
- Establish Special Recreation Management Areas as needed, to meet existing and future demand for motorized recreation opportunities.
- Identify areas suitable for motorized or joint use trail systems that provide winter riding opportunities when other trail systems are closed to use.
- Provide a more easily understandable and consistent management policy for motorized recreational use at different BLM managed lands and better consistency between BLM and other adjacent public lands.
- Decrease user conflicts or conflicts between residents and recreationists, where necessary, through changes in criteria for trail systems or OHV area boundaries.
- Provide for linking trail use areas on BLM to other trail system opportunities on adjacent National Forest lands.
- Identify criteria for trail design and location to increase user satisfaction and safety, including measures to provide for consistency between trail systems and new or upgraded road projects.
- Provide management guidelines for motorized trail/route maintenance.

Non-Motorized Dispersed Use

Issue Description

Non-motorized dispersed use makes up the balance of recreation activities on BLM-managed land, and includes a wide variety of uses. These include but are not limited to trail-oriented uses such as hiking, running, horseback and mountain bike riding, and other dispersed uses such as rock climbing, rock hounding, hunting and target shooting.

Increased levels of recreation use on BLM managed lands have resulted in conflicts between trail users. Conflicts between trail users have resulted in public safety issues and resource management issues where new user-created trails are being developed without consideration of long-term recreation and land use goals. The Brothers/La Pine RMP identified manage-

ment needs for OHV trails, but did not anticipate the growth of non-motorized trail use by equestrians, runners, mountain bikers, or others. The RMP provided no direction for minimizing conflicts between trails users or for providing managed and identifiable trail opportunities beyond those used by OHVs. In addition, current mandates for the use of the Millican Valley OHV area limits trail system use by mountain bikes to the OHV trail system, eliminating options for single track mountain bike experiences in that area.

The Brothers/La Pine RMP did not identify any goals, developments or policy for management and maintenance of non-motorized trails within the planning area, or for connections or compatibility with regional trails systems. There have been proposals by the county for regional trail systems that would depend upon trail alignments on BLM managed lands. Deschutes County has requested specific trail alignments be planned for and identified through BLM's planning process.

Alternatives

The range of alternatives will examine long-term desired conditions for providing a variety of dispersed, non-motorized uses across the planning area considering resource protection needs and recreation demands within specific areas. The range of alternatives will identify criteria under which trail systems would be developed and designated, or where dispersed activities would be encouraged without the use of developed tail systems.

- Identify Special Recreation Management Areas as needed, to address increases in recreational use, future demand, resource concerns, and safety or user conflict issues.
- Identify criteria for determining when facilities such as trail heads and access points need to address present and future recreation needs.
- Identify areas where existing or desired future non-motorized trail systems will be developed, improved or maintained.
- Identify criteria for joint or segregated use trails and conditions under which trail systems would be provided including such things as trail head and parking areas, signing, desired riding trail characteristics, and special event or commercial use.
- Identify conditions for trail links to trail systems outside the planning area such as on adjacent USFS or State Park managed lands.
- Identify criteria for where non-motorized use would be included within designated OHV management areas and the conditions under which such use would be permitted.
- Identify areas where improvements to access trails are needed to increase visitor satisfaction and to reduce resource impacts.
- Collaborate with adjacent land managers to provide more consistent management of rock climbing between BLM and Smith Rock State Park to minimize disturbance to nesting raptors at popular climbing sites.
- Identify criteria for needed improvements at historically used target shooting sites to provide for resource protection, user satisfaction and safety such as signs, road closures or blocking (gates), elimination of parking areas or designated shooting closures at areas where shooting is a safety or user conflict issue.
- Identify new, managed target shooting opportunities where needed through R&PP Act leases. This provision of new, managed shooting opportunities can be focused in the plan on communities that currently do not have a designated shooting range, such as Prineville.

- Identify criteria for new and continued locations for designated rockhounding areas and conditions where areas could be removed from designated areas and restored.

- Collaborate with communities, Chambers of Commerce, and rockhounding clubs to manage and restore rockhounding sites.

- Identify access points and criteria for improving existing access points, including rerouting access roads, development of clearly marked and maintained parking areas, and travel management at major recreational access points to minimize user conflicts and conflicts with adjacent residents.

- Identify new access opportunities (e.g., Hollywood Road on the Lower Crooked Wild and Scenic River) and mechanisms to acquire needed access through road development, road improvements, easements, and/or potential Land and Water Conservation Fund (LWCF) purchase actions.

- Identify access points and needed improvements on the Middle Deschutes and Lower Crooked River segments, particularly at areas that are heavily visited and where unmanaged parking is creating resource damage or where there are safety concerns.

- Identify travel management in areas where BLM currently has cooperative agreements or Memorandums of Understanding (MOUs) with ODF&W for limiting use to designated road systems seasonally, such as hunting season.

- Work collaboratively with ODF&W to identify road systems and seasonal closures to minimize impacts to wildlife while providing a clearly understandable transportation system, particularly during hunting season.

- Provide direction and management goals to increase educational and interpretive opportunities on BLM managed lands.

- Provide increased interpretive and educational opportunities through development of trails associated with historic, non-operating canals.

- Provide interpretive and educational opportunities in development of trails along operating canals, in collaboration with Bureau of Reclamation and local irrigation districts.

- Provide goals and objectives for increased education and interpretive services through management and issuance of new Special Recreation Permits.

Special Recreation Permits

Issue Description

Special recreation permits are issued for commercial recreational activities or large group events. Population growth and increased visitation/awareness of BLM managed public lands has resulted in increasing numbers of requests for Special Recreation Permits. These permit requests include annual or multi-year permits for outfitter/guides (flyfishing, nature hikes, equestrian trail rides, etc.), for single day events (photo shoots, filming, group events, concerts, OHV and mountain bike races, etc.). The Brothers/La Pine RMP provides no direction on how special recreation permits should be managed in the planning area (number of permits, permitted use levels, etc.).

Alternatives

The range of alternatives will examine conditions for commercial recreation providers to supply needed services to the public through special recreation permits, given available resources.
The range of alternatives will examine priorities for commercial or non-commercial permitted and authorized recreational activities. Criteria for considering group activities will include:

- Provide a needed service not available on private lands;
- Support tourism and economic development;
- Ensure compatibility of activities with other public land uses and resources;
- Maintain public health and safety.

Opportunities

- Establish screening procedure for considering recreation permit requests.
- Establish priority for recreation or special event use of areas.

Special Management Areas

Areas of Critical Environmental Concern (ACECs)

Issue Description

The Brothers/La Pine RMP identifies a number of ACECs but does not identify any ACECs that are based on old growth juniper or visual resource characteristics. There has been public interest in placing some special area designations on unfragmented blocks of old growth juniper, such as the Maston Allotment area or other locations around Cline Buttes. As with many of the public lands in the area, increased growth increases the recreational and other casual uses within existing ACECs. Populations of Peck's milkvetch have been identified outside of the boundaries of existing ACECs, while other populations of plants such as Estes' wormwood and pumice grapefern have no ACECs associated with them. The Brothers/La Pine RMP did not provide direction for conditions under which new or expanded ACECs could be established.

Alternatives

The range of alternatives will consider the designation of new ACECs that meet the criteria, review existing ACECs for changes in boundary needs, including to better accommodate protection or interpretation of resources which led to their initial designation or to enable recreational use. The alternatives will consider management guidelines for all existing and proposed ACECs. The alternatives will examine criteria for implementing actions and a range of possible actions based on existing conflicts or concerns related to the relevant and important resources. These criteria will include help to establish thresholds for controlling the amount and type of public use and access in these areas. The alternatives will also identify opportunities to develop public education and interpretation strategies and foster partnerships to help manage and interpret the resources that Special Management Areas are designated for.

New ACEC Proposals

Four ACECs have been proposed to date: Alfalfa Market Road; Columbia Southern Irrigation; Juniper Woodland; and Smith Rock.

Alfalfa Market Road consists of 4,100 acres about four miles west of Alfalfa, south of the road for which it is named. Two smaller areas were nominated by adjacent landowners, via a 1992 letter, and subsequently included into this one, larger area. This nomination was basically to protect an area of "climax western juniper woodland with many trees 9 to 12 feet in circumference." The area includes power line and telephone rights-of-way and numerous fences and roads. Portions have been impacted by human abuse and the entire area is grazed. Nonetheless, the area was determined to meet the necessary relevance and significance criteria and was recommended for designation consideration in 1997.

Columbia Southern Irrigation consists of 316 acres in the vicinity of the southern portion of Barr Road, south of Cline Buttes. This was nominated by Ron Gregory, archeologist for the Prineville District of the BLM, to protect important segments of the historic Columbia Southern Irrigation canal. This system was constructed during the first decade of the twentieth century and possesses considerable National Registry eligibility. Further analysis suggested that rather than identifying this area as an independent ACEC, that it might be better to include this area within a larger Juniper Woodland ACEC, as described below.

Juniper Woodland consists of 31,900 acres of public land surrounding Cline Buttes, including land north of State Route 126. This large area was nominated by Oregon Natural Resources Council with support from other environmental/conservation organizations, to provide a protected area representative of western juniper woodlands. The area contains significant stands of old growth woodland along with existing rights-of-way, mining claims, mineral leases, fences, roads and power lines. Much of the area is within existing grazing allotments and also contains Peck's milkvetch, a special status plant. It was determined that any proposal for Juniper Woodland ACEC should also contain the aforementioned Columbia Southern Irrigation ACEC, as they are within the same area. The area was also proposed to include an extension of the Peck's Milkvetch ACEC. Juniper Woodland proposed ACEC was determined to meet the necessary relevance and significance criteria and was recommended for designation consideration in 1997. An alternate proposal was put forth which reduced the size of the area to 21,350 acres, eliminating that portion north of Jordan Road but retaining Peck's milkvetch populations and the Columbia Southern Irrigation canal proposal. There was also discussion about including/excluding ODOT's proposed Barr Road material site.

Smith Rock consists of the large block of public land northeast of Smith Rock State Park, totaling 2,120 acres. It was originally nominated in the Brothers/La Pine RMP but at that time was determined to lack both relevance and significance. With the new planning effort recognizing the tremendous impacts of development in Central Oregon, the area was re-examined and re-nominated by the planning team. Values primarily relate to its scenic qualities and recreational opportunities. It was determined to meet the necessary relevance and significance criteria and was recommended for designation consideration in 1997.

Opportunities

- Establish public outreach and education programs focused on the ACECs.
- Development and implementation of long-term monitoring strategies, partnerships with adjacent landowners and other interested parties, and active restoration/rehabilitation of natural resources.

Caves

Issue Description

There are many existing caves located within the planning area. Many of the caves located within the planning area are being managed under "emergency closures." Some of these emergency closures are due to expire before the RMP is completed. Increased population growth in the area has resulted in greater number of cave visitors. The popularity of rock climbing in caves, and the likelihood of new USFS, Deschutes National Forest cave management policy may affect future use and management needs at BLM managed caves. The Brothers/La Pine RMP did not identify or expand upon Federal Cave Resource Management Act (FCRPA) requirements, or set any management goals or policy for protection of cave resources.

Alternatives

The range of alternatives will examine criteria to determine conditions for public use and access in and around caves. The alternatives will consider the location and public and resource values associated with the caves and appropriate jurisdictional responsibilities associated with caves.

Opportunities

- Continue the ongoing cave inventory and evaluate the significance of existing nominated caves and new caves found.
- Establish a long-term policy for future development, visitation, and use of caves including Stout and Redmond and surrounding lands.

Wilderness Study Areas

Issue Description

Interim travel management policy within the Wilderness Study Areas is not always clearly understood by users or other agencies, resulting in sometimes inappropriate or uncoordinated activities within those areas. Motorized uses within the Badlands WSA is specifically limited to the interim policy by Court order (see Area Profile - Millican Valley OHV, Chapter 3). Non-motorized uses are increasing, and the Brothers/La Pine RMP does not address management of those uses. Requests for commercial uses within the WSAs are increasing, and the Brothers/La Pine RMP does not identify clear guidelines for prioritizing or permitting those activities (see also Land Uses - Temporary Uses, Chapter 5).

Alternatives

Within the constraints of the Interim Management Policy and Guidelines For Lands Under Wilderness Review (IMP), the range of alternatives will examine long-term desired conditions for motorized and non-motorized use, criteria under which certain actions to maintain Wilderness suitability would be taken, and a suite of actions that would be considered appropriate.

Opportunities

- Develop recommendations on transportation management for all inventoried routes in the Badlands WSA, including which routes are open for travel and for what type of use (motorized and non-motorized).
- Identify management actions, such as perimeter fencing or land exchanges, that will help maintain or improve wilderness suitability.

- Designate access points and provide management direction for trailhead improvements and route management for non-motorized use at Steelhead Falls WSA.

- Identify criteria and priorities for determining when commercial use permits would be permitted.

Archaeological Resources

Issue Description

Archaeological resources are material remains of human life or activities that can provide an understanding about past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly methods and techniques. Currently, uncontrolled use of public lands is the most immediate and pervasive threat to archaeological resources. The public lands are fast becoming more accessible, better known, and more intensively used. In many areas, urban sprawl, encroaching on previously remote areas, is turning the public lands into recreational backyards. The exponential growth rate of central Oregon, coupled with the rise of the recreation industry and an increase of destination resorts, capped by the explosion in the use of mountain bikes, ATVs, and four-wheel-drive vehicles has dramatically increased visitation to lands that were previously used only by small numbers of visitors. This increased visitation often results in intentional or inadvertent damage to archaeological resources due to collection, vandalism, surface disturbance, and other depreciative behavior.

In addition to a rise in recreational use, authorizations for rights-of-ways, mining, public facilities, habitat improvements, land exchanges, urban growth and other legitimate and necessary uses of the public lands have increased. Those uses will continue to result in an ever-diminishing archaeological resource base, even when data recovery or other forms of mitigation are employed.

Alternatives

The range of alternatives will examine conditions under which archaeological resources can be managed pro-actively considering their scientific, sociocultural, educational and recreational values.

Opportunities

- Establish conditions for prioritizing areas for surveys and evaluation from which scientifically based conclusions can be made about the past.

- Establish goals for National Register Nominations that reflect the potential cultural and historical significance of the area.

- Develop partnerships with State Historic Preservation Office (SHPO), local communities, counties, American Indian Tribes, corporations, scientific and educational organizations and other interested parties.

- Identify priority sites for funding to interpret, protect, and preserve for their educational/recreational values areas such as Redmond Caves, Horner Road, Steelhead Falls, Tumalo canals and other significant heritage resources.

- Establish conditions of design for roads, trails, facilities and other proposed undertakings to minimize impacts to important archaeological and historical resources.

- Consider the significance of cultural sites when determining priorities of land acquisitions from willing sellers.

- Establish the desired conditions for pro-active management of cultural resources and properties

Public Health and Safety

Issue Description

Increasing population densities in the central Oregon area have resulted in a growing number of situations that have the potential to affect public health and safety. These include such things as fire management, illegal dumping that can include hazardous materials, shooting, and increased livestock and vehicle collisions. Most of these issues overlap other issues discussed previously, such as fire management with ecosystem health and diversity, shooting with recreational activities, and livestock and vehicle collisions with livestock use, and may eventually be incorporated into these issues. However, they are presented here under the category of public health and safety to characterize the degree to which these aspects may represent a risk to the public.

Communities in the Upper Deschutes Planning Area have been steadily expanding over the past twenty years. This tremendous expansion of the wildland urban interface dramatically increases the problem of communities at risk from wildland fire, as well as adding a source of ignitions that can move quickly onto the public lands. The Brothers/La Pine RMP mapped the planning area by risk level, but the values at risk have increased and expanded. The 1995 Federal Fire Policy established direction for planning to protect communities at risk that was not incorporated into that plan.

Numerous members of the general public, as well as landowners adjacent to public land have complained about increasing illegal dumping on BLM land. This activity damages the scenic quality of an area and can pose a serious health or safety risk if the materials are highly toxic. These activities only occur where there is motorized access, and appear to be related to the distance from residences and population centers. While all of these activities are illegal, guidance that would reduce the ability of people to easily access repeated problem areas, or joint programs with other jurisdictions to reduce costs or to improve convenient access to land fills are not in place.

For many BLM managed lands in the urban interface, there have been comments on public safety and noise from firearm use adjacent to residential areas. The increase in recreational use and residential development adjacent to BLM managed lands has increased these conflicts since the Brothers/La Pine RMP was created in 1989. Continuing development of residential subdivisions adjacent to BLM managed public lands is likely to result in more conflicts between landowners and public lands visitors, and more requests for BLM to better manage/control uses adjacent to private property. The Brothers/La Pine RMP does not identify or provide management direction for addressing these public safety issues.

The increased use of public land and increased development next to public land have also increased the potential for cattle to stray onto busy roads. The change in traffic volumes and speeds in areas traditionally less subject to high speed travel, combined with an increased propensity for gates to be left open in grazing allotments by recreationists, and less understanding of open range requirements have created additional safety hazard.

Alternatives

The range of alternatives will examine criteria to resolve public safety issues, with an emphasis on potentially life-threatening conflicts. The alternatives will consider conditions under which activities such as shooting or campfires would be permitted when considering other levels of use and/or the proximities of private residences

The alternatives will examine fuel conditions by area, considering life and property at risk, ecosystem and wildlife values. The range of alternatives will consider the contribution of adjacent landowners to property protection and identify programs to educate homeowners about fire in the ecosystem.

Opportunities

- Strengthen existing partnerships with ODF and community groups to support education programs on fuel reduction and fire safety and execution of hazardous fuels reduction projects at the wildland urban interface.
- Coordinate management activities with National Fire Plan and Central Oregon Fire Management Plans to target protection of communities and municipal watersheds as a high management priority.
- Establish fuel reduction strategies and buffers at the wildland urban interface to enhance opportunities for suppression forces to arrest fire spread. Determine a long range maintenance schedule with appropriate methods to perpetuate the fuel buffers over time.
- Describe the desired role of fire across the planning area in the future, or alternatives to achieve the desired effects of natural fire through management.
- Provide a strategy to manage emissions from hazardous fuels reduction activities to reduce impacts to air quality.
- Establish desired conditions for community involvement in addressing vandalism and dumping problems.
- Identify areas where permanent or seasonal campfire closures may be needed.
- Identify areas where overnight camping closures may needed, or where a change in the camping limit of 14 days is needed.
- Identify areas closed to shooting based on public safety, noise, or resource concerns
- Minimize access to repeated dumping sites.
- Develop criteria for considering public safety concerns related to connections between grazing allotments and high speed paved, public roads.
- Modify season of livestock grazing use or eliminate livestock grazing in areas bisected by or adjacent to busy roads.

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- Work with State and counties to analyze need for changes in herd district laws (which govern when livestock owners are and are not responsible for keeping livestock within a certain area)

Social and Economic Values

Issue Description

As reflected in the issues described above, there is a tremendous demand for the management of public lands to be responsive to the social and economic values of the local, regional, and national populace. There are demands and desires for lands, uses, and commodities associated with local social and economic values that may be in conflict with regional values, such as is represented by the issue over mineral demands. National values for maintaining public lands for wildlife habitat or recreational or other commodity production may conflict with local economic values for lands to be made available to respond to local needs. In many cases, not all values or interests in those lands can be met. The Brothers/La Pine RMP did not effectively display these trade-offs in land use or land ownership decisions.

Alternatives

Based on the range of alternatives designed to address the previous issues, the Upper Deschutes RMP will display the social and economic trade-offs between alternatives.

Opportunities

- Establish base-line information about social conditions and how people value public lands.
- Monitor social and economic impacts on local and regional communities based on state and regional benchmarks.
- Determine economic importance of public lands to local communities.

Chapter 6
Collaborative Planning

Introduction

The BLM is committed to a community-based planning process that respectfully considers the diverse opinions and needs of local, regional, and national interests. To use this kind of approach, a variety of stakeholders must be represented to help identify the issues, develop a range of alternatives, and to have input as to how the plan, once completed, can be implemented. A preliminary listing of stakeholders can be reviewed in Appendix G (Jurisdictional and Population Relationships).

This chapter describes the overall planning process and outlines BLM's expectations for interaction between a variety of stakeholders that have an interest in the outcome of the plan.

Products and Timeline of the Planning Process

Figure 6 illustrates the products and proposed timeline for the planning process. The following summarizes and defines those products.

The Upper Deschutes Resource Management Plan (RMP) - prepared in accordance with a number of laws and regulations (see also Chapter 2), but will primarily follow the process prescribed by the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA). These procedural and substantive laws provide the basis for the planning process and the products that will be produced as a result of this effort.

Analysis of the Management Situation (AMS)- describes the existing condition of the planning area, the scope of the decisions to be made by the RMP, the preliminary issues and alternatives, and the collaborative planning process to be used.

Draft Environmental Impact Statement (DEIS)- builds on the AMS and identifies a range of alternatives that meet the purpose and need for action and address issues within the scope of the decisions to be made. The DEIS will analyze the environmental consequences of implementing the alternatives, and identify a preferred alternative. There will be a 90 day comment period on the DEIS.

Final Environmental Impact Statement and Proposed Management Plan (FEIS)- based upon comments on the DEIS and Preferred Alternative, the FEIS will modify the range of alternatives, including the preferred alternative, and/or the environmental consequences. The Proposed Management Plan will include a more detailed description of the preferred alternative. The FEIS and Proposed Management Plan will have a 30 day public comment period, during which protests to the proposed decision may be filed with the BLM State Director.

Record of Decision and Final Management Plan (ROD) - ROD will formally present the rationale for the selected alternative, including the BLM State Director's response to any protests filed as a result of the Proposed Management Plan. The final management plan will include goals, objectives, and standards for the selected alternative, as well as an implementation and monitoring plan.

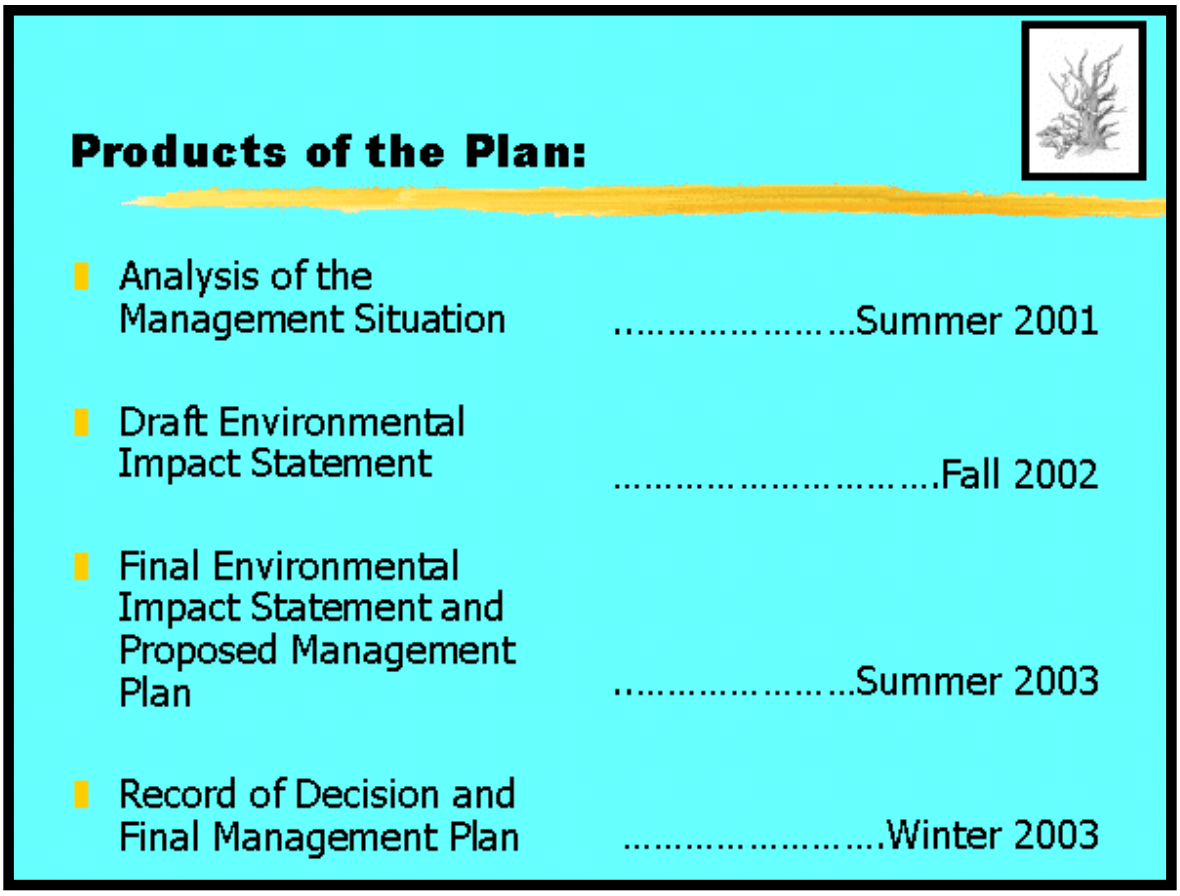

Figure 6: Products of the Plan

Consultation, Cooperation, Collaboration, and Public Participation

Terminology and Goals

There are a number of terms that will be used in this chapter to describe the interactions between people during this planning process. In many cases, these terms might have different meanings in a more general context, however, for the purposes of this process, the definitions described below will be used consistently. Although all of these terms could be included under the "collaboration" umbrella, there are distinct goals and desired outcomes for each term, which are also described below.

Consultation - formal and informal consultation as defined by laws such as the National Historic Preservation and Endangered Species Acts. Also any input formally requested for analysis purposes from any internal or external source. The goal is to identify, through appropriate levels of discussion with and comments from entities having specific legal jurisdictions or expertise, issues and environmental effects that are critical to decision-making.

Collaboration - a formalized process of identifying and involving inter-active participants in different parts of the analysis process. Collaboration is expected to result in some level of informed consent by all participants concerning the issues and range of alternatives. For the

purposes of this plan, that is intended to include members both exempt from and subject to the Federal Advisory Committee Act. The goal is to engage interagency and stakeholder participation to verify the issues to be addressed within the scope established for the plan, and to develop reasonable community approaches (alternatives) to those issues. Collaboration also helps to identify and confirm the projections of the environmental effects of proposed solutions, and may identify preferred solutions based upon a consensus of broad-based interests.

Cooperation - a formal procedure, established under the NEPA, of identifying partners for multi-jurisdictional decision-making. Cooperators will be identified based on their willingness to make decisions concerning their jurisdictions within the scope of the plan. Cooperators will be more directly involved in establishing the policy direction of the planning effort as regards their discreet jurisdictions. The goal is to encourage multi-jurisdictional decision-making to produce "one plan" that all jurisdictions can agree to and jointly implement. Where necessary or appropriate, multiple decision mechanisms by each agency may be used.

Public Participation - a process designed to inform and involve all people and organizations not otherwise involved in the planning effort through Consultation, Cooperation, or Collaboration. This will include but not be limited to published material on a variety of media, and management and public briefings or presentations. Involvement will include opportunities to comment on preliminary and draft published materials, general public information or comment meetings, and periodic plan updates. The goal is to assure that a broad constituency is informed of and has an opportunity to participate in the planning process.

Pulling all of the interests and jurisdictions together efficiently and effectively, while providing an open and sharing public process presents numerous challenges. As mentioned earlier, and throughout this document, other jurisdictions have opportunities for cooperative decisions associated with this planning process. As yet, specific Cooperators have not been determined. The collaborative planning framework described below offers an opportunity for that to occur.

The collaborative planning framework described here, and illustrated in Figure 7, is designed to allow for inter-government and general public interaction to help resolve issues identified for the planning area. An intergovernmental interdisciplinary team will work together to help clarify issues and design alternatives to address those issues. The Deschutes Provincial Advisory Committee (PAC), a chartered Federal Advisory Committee, will charter a subcommittee of its members and a number of working groups - called Issue Teams - representing a cross section of the general public. The Issue Teams will provide advice to the intergovernmental interdisciplinary team about the issues to be addressed, and possible ways to resolve those issues within the scope of the decisions to be made. Below is a brief description of the expected duties of each of the Issue Teams.

BLM or multi-agency decision-makers - federal or other partners that have legal authorities to make decisions over affected lands (Cooperators).

Interagency Interdisciplinary Team - Intergovernmental Team primarily responsible for producing staff work, including analyses, for decision-makers on the integrated components of the plan.

PAC Subcommittee - members of PAC that review the work of and/or participate on Issue Teams and provide subsequent recommendations to the PAC on advice that should be transmitted to the BLM within the scope of the Issue Teams charter.

Issue Teams - a variety of teams focusing on specific planning issues and composed of representative members of the general public, specific interest groups, permit holders, other

stakeholders and relevant government agencies willing to work together to achieve the purposes of the team charter. These teams would provide recommended advice to the PAC Subcommittee and thence to the BLM regarding:

- whether issues and interests within the scope of the decisions to be made raised by the public have been adequately recognized and described;
- development of a reasonable range of integrated alternatives that are responsive to the issues and within the scope of the decisions to be made;
- whether consensus on a preferred alternative is possible within a given period of time.

The teams would work together on a consensus basis to meet these charges, with frequent opportunities for the general public to review and comment on the nature of the work as it progresses. The teams could include "sub-teams" that work on specific geographically-oriented issues (e.g., land ownership patterns in a specific sub-watershed) in order to make sure that issues are addressed at the appropriate scale. Team charges are also likely to overlap, and may call for the creation of "sub-teams" to identify alternatives that might affect more than one Issue Team. For instance, those interested in developing alternatives that consider the community expansion and transportation infrastructure needs of Redmond, Sisters, or Prineville may be subteams of both the Land Ownership and Transportation and Access teams. The charge of the subteams may be to look at one area potentially affecting another area, while the Issue Team's responsibility would be to integrate those ideas into the "big picture." This can be configured in tandem with the team's development. Teams would be kept to a "workable" size which will be determined by the people involved but generally not over 20.

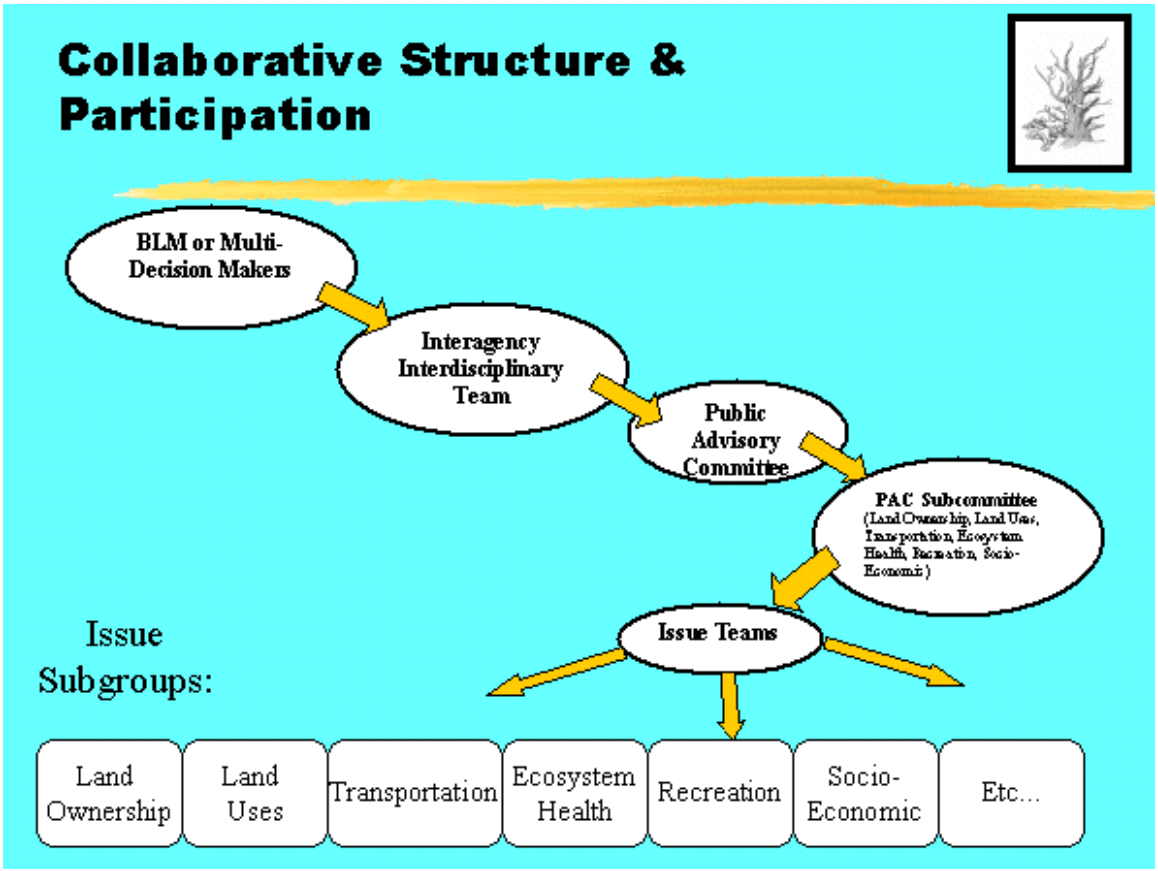

Figure 7: Collaborative Structure and Participation

Other Interagency Collaborative Efforts

BLM is currently participating in other collaborative interagency teams addressing interests in public land ownership, transportation projects that have been proposed that would use or are adjacent to public lands, or where there are shared or split jurisdictions. Any or all of these efforts may be combined into the RMP as appropriate.

BLM is working in cooperation with local governmental agencies on the Redmond Area Collaborative Planning Effort. The Collaborative Planning Effort is sponsored by the Community Solutions Team to consider future projects for the area east of Redmond, northeast of Bend, east of Highway 97, west of Powell Butte Highway, and south of O'Neil Highway. The Community Solutions Team was established by Governor Kitzhaber in Executive Order 97-22 to coordinate state resources and encourage the development of quality communities. It is comprised of the following state agencies: Department of Environmental Quality, Oregon Department of Transportation, Department of Land Conservation and Development, Housing and Community Services Department, and Oregon Economic Development Department. Other members of the Collaborative Planning Effort include Deschutes County, City of Redmond, City of Bend, Redmond Airport, and Oregon Military Department.

BLM is a member of a committee formed to consider the disposition of State Highway 27, which extends from Prineville, along the Crooked River, over Bowman Dam, along Bear Creek, through Sage Hollow, and terminates at the intersection of Highway 20. It has been proposed that the "Highway 27" designation be moved to the Millican-West Butte Road. Agencies comprising the primary team include BLM, Oregon Department of Transportation, the City of Prineville, Crook County Road Department, Deschutes County Road Department, Crook County Court, Oregon Department of Fish and Wildlife, and the Governor's Office. Interested agencies include the City of Bend, Oregon State Parks and Recreation Department, and Central Oregon Area Council on Transportation.

BLM is a member of the Central Oregon Area Council on Transportation.sponsored through the Oregon Department of Transportation. The purposes of this committee are to disseminate transportation information; consider, prioritize, and recommend schedules for area transportation projects; and provide mutual assistance among cooperating agencies.

BLM is a cooperating agency in projects sponsored by Bureau of Reclamation for the Prineville Reservoir, including the safety of dams project, the Prineville Reservoir Resource Management Plan, and the review of water allocation. BLM works in concert with the Bureau of Reclamation, Oregon State Parks and Recreation Department, Central Oregon Irrigation District, Crook County, Oregon Department of Fish and Wildlife, the National Guard Youth Challenge Program, and the City of Prineville.

BLM participates in the Deschutes/Ochoco National Forest Road Management Strategy. The purpose of working with the Forest Service in their road study is to identify similarities and differences in the two road systems, identify primary or most-used roads that are shared by both agencies, establish similar management and maintenance strategies for these roads, identify the need for any new roads, and share or develop a process and guidelines for defining future access.

BLM is currently participating with the Deschutes National Forest, the Oregon Department of Environmental Quality, and the Upper Deschutes Watershed Council in the preparation of joint Water Quality Restoration Plans for the Upper and Little Deschutes sub-basins.

The Central Oregon Intergovernmental Council has supported the BLM on several projects, including those mentioned above, by providing information and access to resources and research.

General Public Participation

In addition to the focused, collaborative planning model described above, other opportunities for the public to participate in the planning process will be available. A number of organized public meetings will be held in conjunction with the release of the Analysis of the Management Situation, the Draft Environmental Impact Statement, and the Final Environmental Impact Statement and Proposed Management Plan. The public will have an opportunity to provide written and oral comment at all of those meetings. All of the Issue Team meetings will be open to the general public, with a designated opportunity for public comment at each meeting. As described below, an internet Web site is currently on-line (see address below), and will be periodically updated with meeting dates for the Issue Teams or other information about the planning process.

Information Sharing

The BLM will use a number of information sharing techniques to give people the opportunity to share new information and to be kept up-to-date on the planning process. The following is a brief summary of some of those techniques.

Upper Deschutes Resource Management Plan Web Site

The Upper Deschutes RMP web site will provide information such as plan updates, meeting dates, plan schedule, and working documents of the Issue Teams.

The address is: http://www.or.blm.gov/Prineville/Deschutes_RMP/Home.htm

Plan Updates

Periodically, consolidated "snapshot" portraits of the plan's status will be prepared, posted to our web site, and mailed to our mailing list. News releases in local newspapers, and feature stories and broadcasts on local television and/or radio stations will be associated with major public meetings.

Glossary

Access - The ability of public land visitors to reach the areas they wish to visit.

Access Statement - A legal right to cross the land granted to the public by a landowner.

ACEC - Area of Critical Environmental Concern - type of special land use designation specified within the Federal Land Policy and Management Act (FLPMA). Used to protect areas with important resource values in need of special management.

Acre - A unit of area used in land measurement, equal to 43,560 square feet. There are 640 acres in one square mile.

Abiotic - Pertaining to the non-living parts of an ecosystem, such as soil, rock, air, water.

Advisory Council on Historic Preservation - a council established by the National Historic Preservation Act of 1966 that plays a key role in the evaluation, nomination, and treatment of National Register properties (=Keepers of the Register).

Allowable Sale Quantity (ASQ) - The quantity of timber that may be sold from an area covered by a forest management plan during a time period specified by the plan. Usually expressed as an average annual quantity.

AMS - Analysis of the Management Situation; Step 4 of the BLM's land use planning project. It is a comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

Allotment - A specific portion of public land allocated for livestock grazing, typically with identifiable or fenced boundaries and permitted for a specified number of livestock.

Allotment Management Plan - A BLM document that directs the management of livestock grazing on a specific area of public land.

Appropriate (Fire) Management Response - Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Area of Traditional Cultural Significance - for the purposes of this plan, can be defined as those locations used by Indian people to maintain their values, beliefs, and cultural identity. Such locations would include, but not be limited to, traditional plant collecting areas, fishing stations, or places for practicing traditional religious beliefs.

AUM - Animal Unit Month - the amount of forage required to sustain one cow and calf for one month.

BLM - Bureau of Land Management - government agency with the mandate to manage Federal lands under its jurisdiction for multiple uses.

BMPs - Best Management Practices - A set of practices which, when applied during implementation of management actions, ensures that negative impacts to natural resources are minimized. BMPs are applied based on site-specific evaluations and represent the most effective and practical means to achieve management goals for a given site.

Board Foot - The amount of wood contained in an unfinished board one inch thick, 12 inches long, and 12 inches wide. A common abbreviation is BF or, for one thousand board feet, MBF, or for one million board feet, MMBF.

Broad Scale - A large, regional area, such as a river basin and typically a multi-state area.

Bureau Sensitive Species - Species eligible as Federally listed or candidate, state listed or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Database, or otherwise approved for this category by the State Director.

Candidate Species - Any species included in the Federal Register Notice of Review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Cell - Unique Ecosystem type used by the Oregon Natural Heritage Plan to inventory, classify and evaluate natural areas. Cells contain one or more ecosystem elements, which are assemblages of integrated organisms plus the environment supporting them.

Climax - The culminating stage of plant succession for a given environment; the vegetation conceived as having reached a highly stable condition.

Collaboration - a formalized process of identifying and involving interactive participants in different parts of the analysis process. Collaboration is expected to result in some level of informed consent by all participants concerning the Issues and Range of Alternatives. For the purposes of this plan, that is intended to include members both exempt from and subject to the Federal Advisory Committee Act.

Communication Site - (1) A hilltop or favorable signal receiving and transmitting location where a collection of facilities are sited. A facility consisting of a small building and tower, used for transmission or reception of radio, television, telephone or other electronic signals.

Consultation - formal and informal consultation as defined by laws such as the National Historic Preservation and Endangered Species Acts. Also any input formally requested for analysis purposes from any internal or external source.

Cooperation - a formal process, established under the National Environmental Policy Act (NEPA), of identifying partners for multi jurisdictional decision-making. Cooperators will be identified based on their willingness to make decisions concerning their jurisdictions within the scope of the plan. Cooperators will be more directly involved in establishing the policy direction of the planning effort as regards their discreet jurisdictions.

Critical Habitat (CH) - BLM Manual 6840 defines Critical Habitat as an area designated as such and listed in 50 CFR Parts 17 and 226 and is any air, land, or water area (exclusive of those existing manmade structures or settlements which are not necessary to the survival an recovery of a listed species) and constituent elements thereof, the loss of which would appreciably decrease the likelihood of the survival and recovery of a listed species or a distinct segment of its population. The constituent elements of Critical Habitat include, but are not limited to: physical structure and topography, biota, climate, human activity, and the quality and chemical content of land, water, and air. Critical Habitat may represent any portion of the present habitat of a listed species and may include additional areas for reasonable population expansion. Federal Definition of critical habitat is: (i) the specific areas within the geographic area occupied by the species, at the time it is listed ...on which are found those physical and biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; (ii) specific areas outside of the geographical area occupied by the species, at the time it is listed ... upon a determination of the Secretary that such areas are essential for the conservation of the species; and (iii) Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which ca be occupied by the threatened or endangered species. [ESA Section 3]

Cultural Resource - Material or non-material aspects of human culture which are significant to living cultures, including groups maintaining and preserving their traditions, and academic researchers such as anthropologists and historians.

EA - Environmental Assessment - one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) which portrays the environmental consequences of proposed Federal actions which are not expected to have significant impacts on the human environment.

EIS - Environmental Impact Statement - one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) which portrays the environmental consequences of proposed major Federal actions which are expected to have significant impacts on the human environment.

EMS - Existing Management Situation - a component of the Analysis of the Management Situation; a description of the existing management direction governing resource management programs of a planning area.

ESI - Ecological site inventory - the basic inventory of present and potential vegetation of BLM rangelands. Ecological sites are differentiated on the basis of soil type and kind, proportion, or amount of plant species.

Ecosystem - A spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries. An ecosystem can be of any size, e.g., a log, pond, field, forest, or the earth's biosphere.

Ecosystem Management - The use of a "whole-landscape" approach to achieve multiple-use management of public lands by blending the needs of people and environmental values in such a way that these lands represent diverse, healthy, productive, and sustainable ecosystems.

Ephemeral stream - A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no continuous supply from melting snow or other source, and its channel is above the water table at all times.

Endangered Species - Any species defined under the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range. Listings are published in the Federal Register.

Erosion (accelerated) - Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, e.g., fire, that exposes the surface.

Extirpated - Having become extinct in a specific area while the species as a whole continues to exist elsewhere.

FLPMA - Federal Land Policy and Management Act of 1976; law mandating that the Bureau of Land Management manage lands under its jurisdiction for multiple uses.

Fine Scale - A single landscape, such as a watershed or subwatershed.

Fire Management Plan (FMP) - A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Fire Preparedness - Activities that lead to a safe, efficient, and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Flood plain - A nearly level alluvial plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional land form built of sediment deposited during overflow and lateral migration of the stream.

Forestland - Land stocked with at least 10% live trees or land formerly having such tree cover and not currently developed for nonforest use.

Functional-At-Risk - Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Game Species - Wildlife species hunted for sport.

Ground water (geology) - Water filling all the unblocked pores of the material below the water table.

HMA - (Wild Horse) Herd Management Area; public land under the jurisdiction of the Bureau of Land Management that has been designated for special management emphasizing the maintenance of an established wild horse herd.

HRV - Historic Range of Variability - A term used in this document in reference to the distribution of vegetative structural stages estimated to have occurred on the landscape at the turn of the century. With consideration for natural variation, proportions of structural stages are expressed as a range reflecting historic distributions. Vegetation patterns in the HRV are assumed to be the result of historic disturbance regimes prior to the disruption of natural system processes by human influence.

Ignimbrite - A volcanic rock formed by the welding together of tuff material from an explosive volcanic eruption.

ICBEMP - Interior Columbia River Basin Ecosystem Management Project - an on-going project examining the effects (on a large, regional scale) of past and present land use activities on the Interior Columbia River Basin ecosystem and a small part of the Great Basin ecosystem.

Information Sharing - a process designed to keep everyone informed about what is happening in the planning effort. This will include but not be limited to published material on a variety of media, and management and public briefings and/or presentations.

Initial (Fire) Attack - An aggressive fire suppression action consistent with fire fighter and public safety and values to be protected.

Interdisciplinary - Involving more than one discipline or resource management program. Promotes resource management at a plant community, landscape, or ecosystem level.

Intermittent stream - A stream, or reach of a stream, that flows for prolonged periods only when it receives groundwater discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Issue - an opportunity, conflict, or problem about use or management of public land resources. The resolution of issues is the basis for preparing the resource management plan.

Leasable Minerals - Minerals that may be leased to private interests by the Federal government and includes oil, gas, geothermal, coal, and sodium compounds.

Litter - The Dead remains of plants, usually lying on the soil surface.

Loam - A soil textural class containing roughly equal amounts of sand. silt, and clay.

Locatable Minerals - Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Management Concern - procedures or land-use allocations that do not constitute issues but, through the RMP/EIS preparation process, are recognized as needing to be modified or needing decisions made regarding management direction.

MFP - Management Framework Plan - older generation of land use plans developed by the Bureau of Land Management. This generation of planning has been replaced by the Resource Management Plan (RMP).

Management Opportunities - a component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

Mesic - Pertaining to sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet or dry.

Microbiotic Crusts - lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the surface of soils.

Mineral Estate - Refers to the ownership of minerals at or beneath the surface of the land.

Mitigating Measures - Modifications of actions that (a) avoid impacts by not taking a certain action or parts of an action, (b) minimize impacts by limiting the degree or magnitude of the action and its implementation, (c) rectify impacts by repairing, rehabilitating, or restoring the affected environment, (d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action, or (e) compensate for impacts by replacing or providing substitute resources or environments.

Monitoring and Evaluation - The collection and analysis of data to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management goals and objectives.

Multiple Use - Management of public land and its resources to best meet various present and future needs of the American people. This means coordinated management of resources and uses.

NEPA - National Environmental Policy Act of 1969 - law requiring all Federal agencies to evaluate the impacts of proposed major Federal actions with respect to their significance on the human environment.

NRHP - National Register of Historic Places - Established by Congress with the passage of the National Historic Preservation Act of 1966, the register constitutes an ever increasing, formal list of sites that are culturally significant according to specific criteria.

NWR - National Wildlife Refuge - an area administered by the U.S. Fish and Wildlife Service for the purpose of managing certain fish or wildlife species.

Non-functional - Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Non-Game Species - Wildlife species which are not hunted for sport.

Noxious Weed - a plant specified by law as being especially undesirable, troublesome, and difficult to control.

OHV - Off Highway Vehicle - Unless otherwise stated, this generally refers to Class I all-terrain vehicles, Class II full width four-wheel drive vehicles, and Class III motorcycles.. Unless otherwise stated, this generally refers to Class I all-terrain vehicles, Class II full width four-wheel drive vehicles, and Class III motorcycles.

Perennial Stream - A stream in which water is present during all seasons of the year.

Preferred Alternative or Plan - The alternative plan, in the Draft EIS, which the agency has initially selected that best fulfills the agency's statutory mission and responsibilities and offers the most acceptable resolution of the planning issues and management concerns.

Prescribed Fire - The introduction of fire to an area under regulated conditions for specific management purposes (usually vegetation manipulation).

Prescribed Natural Fire - A fire caused by lightning for which minimal to no suppression action is taken if it is under pre-determined conditions and within acceptable parameters. Prescribed natural fire is used to accomplish certain resource objectives.

Proper Functioning Condition - Adequate vegetation, land form, or large woody debris present to dissipate stream or wave energy, filter sediment and capture bedload, improve flood water retention, develop root masses that stabilize stream banks, islands and shore-lines, develop diverse ponding and channel characteristics to provide habitat for aquatic species, and support greater biodiversity.

Public Land - Any land or interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

Public Participation - a process designed to inform and involve all people and organizations not otherwise involved in the planning effort through Consultation, Cooperation, or Collaboration. Involvement will include opportunities to comment on preliminary and draft published materials, general public information or comment meetings, periodic receipt of update material.

R&PP Act - Recreation and Public Purposes Act - An act passed by Congress which allows state and local governments and nonprofit organizations to lease and eventually acquire title to public lands for recreational or community expansion and other public purposes. The act was passed in recognition of the strong public need for a nationwide system of parks and historic preservation areas along with lands for other public purposes such as schools, fire houses, law enforcement facilities, municipal facilities, land fills, hospitals, and fairgrounds.

RAP - Resource Area Profile - a component of the analysis of the management situations; a description of the current condition, amount, location, use and demands of the natural resources in a planning area.

RNA - Research Natural Area - an area where natural processes predominate and which is preserved for research and education. Under current BLM policy, these areas must meet the relevance and importance criteria of ACECs and are designated as ACECs. Or, ribonucleic acid.

Resource Area - the "on-the-ground" management unit of the Bureau of Land Management comprised of BLM-administered land within a specific geographic area.

RMP - Resource Management Plan - current generation of land use plans developed by the Bureau of Land Management under the Federal Land Policy and Management Act. Replaces the older generation Management Framework Plans. Provides long-term (up to 20 years) direction for the management of a particular area of land, usually corresponding to a BLM resource area, and its resources.

RNA - Research Natural Area - An area of significant scientific interest that is designated to protect its resource values for scientific research and study.

Right-of-Way - A grant that authorizes the use of public lands for specified purposes, such as pipelines, roads, telephone lines, electric lines, and reservoirs.

Salable Minerals - High volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand, gravel, and cinder.

Scenic Corridor - An area of special aesthetic values, including scenic vistas, unusual geologic or vegetative features, or other natural elements.

Scenic River - A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

Scoping- The process of identifying the range of consideration, issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and external, or public, involvement.

Seral Stage - the rated departure of a plant community from a described potential natural community (PNC) for a specific ecological site. Low-seral stage is an existing plant community which is defined as 0-25% comparability to the defined PNC; Mid-seral stage is an existing plant community which has 26-50% comparability to the PNC; Late seral stage is 51-75% comparable to the PNC; PNC is an existing plant community with 76-100% comparability to the defined PNC.

Special Status Species - Plant or animal species falling into any one of the following categories: Federally listed threatened or endangered species, species proposed for Federal listing as threatened or endangered, candidate species for Federal listing, State listed species, Bureau sensitive species, Bureau assessment species (see separate definition for each).

Species Diversity - The number, different kinds of, and relative abundances of species present in a given area.

Stand - A contiguous group of similar plants. For forest use, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

State Listed Species - Any plant or animal species listed by the State of Oregon as threatened or endangered within the state under ORS 496.004, ORS 498.026, or ORS 564.040.

Sub-basin Review - an interagency, collaborative consideration of resources, resource management issues, and management recommendations for one or more subbasins or watershed drainages approximately 800,000 to 1,000,000 acres in size.

Succession - The gradual supplanting of one community of plants by another. The sequence of communities is called a sere, or seral stage.

Sustained Yield - Maintenance of an annual or regular periodic out put of a renewable resource from public land consistent with the principles of multiple use. Also: The yield that a forest can produce continuously at a given intensity of management. Sustained yield management implies continuous production, so planned as to achieve, at the earliest practical time, a balance between increment and cutting.

TNC - The Nature Conservancy; a private national organization dedicated to the preservation of biological diversity.

Threatened Species - Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Listings are published in the Federal Register.

Timberland - Forestland capable of continuously producing 20 cubic feet or more per acre of industrial wood.

USDI - U.S. Department of Interior; government department which oversees the Bureau of Land Management and many other agencies.

USFWS - U.S. Fish and Wildlife Service; government agency responsible for managing fish and wildlife and their habitats.

Visual Resources - The aesthetic qualities of the landscape. This is determined by assessing the scenic quality of a site, the sensitivity of people to changes in the landscape, and the visibility of the landscape from major viewing routes and key observation points.

Watershed - The region draining into a river, river system, or body of water. A fifth-field hydrologic unit code of the U.S. Geologic Survey (USGS) comprising 50,000 to 100,000 acres.

Wilderness - An area that is essentially natural in character that has been designated by Congressional action in order to preserve that naturalness.

WSA - Wilderness Study Area; public land under the jurisdiction of the Bureau of Land Management which has been studied for wilderness character and is currently in an interim management status awaiting official wilderness designation or release from WSA status by Congress.

Wildfire - Any unwanted wildland fire.

Wildland Fire - Any non-structure fire, other than prescribed fire, that occurs in the wildland.

WFSA Wildland Fire Situation Analysis - A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wild River - A river or section of a river that is free of impoundments and generally inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted.

Woodland - A plant community in which, in contrast to a typical forest, the trees are often small or short-boled relative to their crown width or height. Collectively, the trees form an open canopy with the intervening area occupied by lower vegetation, commonly grass or shrub.

Xeric - Pertaining to sites or habitats characterized by decidedly dry conditions.

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Abbreviations

AC.	Acre (ac.)
ACEC	Area of Critical Environmental Concern
ADT	Average Daily Traffic
AMS	Analysis of the Management Situation
ASCO	Archeological Society of Central Oregon
ASQ	Allowable Sale Quantity
ATV	All Terrain Vehicle
AUM	Animal Unit Month
BECA	Bald Eagle Consideration Area
BEMA	Bald Eagle Management Area
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
BS	Bureau Sensitive
CAA	Clean Air Act
CAFO	Confined Animal Feeding Operations
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
Co.	County
COSSA	Central Oregon Shooting Sports Association
CRNG	Crooked River National Grassland
CRR	Crooked River Ranch
DBH	Diameter Breast Height
DEQ	Department of Environmental Quality (Oregon)
DNA	Deoxyribonucleic Acid
DNF	Deschutes National Forest
DOI	Department of Interior
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FCRPA	Federal Cave Resources Protection Act
FCRPA	Federal Caves Resources Protection Act
FLPMA	Federal Land Policy and Management Act
FS	Forest Service
FWS	Fish and Wildlife Service
IBLA	Interior Board of Land Appeals
IMP	Interim Management Policy for Lands Under Wilderness Review
ISA	Instant Study Area
KLA	Known Linkage Area
LAU	Lynx Analysis Units
LWCF	Land and Water Conservation Fund
MBF	Thousand Board Feet
MMBF	Million Board
MO	Management Objectives
MOU	Memorandum of Understanding
NEPA	National Environmental Protection Act
NSS	National Speleological Society
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF&W	Oregon Department of Fish and Wildlife

ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OEF	Oregon Eagle Foundation
OHV	Off-Highway Vehicle
OMD	Oregon Military Department
ORV	Off-Road Vehicle or Oustandingly Remarkable Value
OSU	Oregon State University
PFC	Proper Functioning Condition
PNW	Pacific Northwest
R&PP Act	Recreation and Public Purposes Act
RD	Ranger District
RMP	Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
ROW	Right of Way
RV	Recreational Vehicle
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SOC	Species of Concern
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SUP	Special Use Permit
T	Listed Threatened by the State of Oregon
T&E	Threatened and Endangered
TCP	Traditional Cultural Property
TNC	The Nature Conservancy
U.S.C.	United States Code
UI	Urban Interface
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VQO	Visual Quality Objectives
VRM	Visual Resource Management
W&S River	Wild and Scenic River
WSA	Wilderness Study Area

Appendices

Appendix A. 303(d) Listed Streams by Sub-basin

Sub-basin/Stream Name	Location	Listed Parameter
Little Deschutes Sub-basin		
Crescent Creek	Mouth to Crescent Lake	Temperature
Little Deschutes River	Mouth to Crescent Cr. and Crescent Cr. to Hemlock Cr.	Temperature
Paulina Cr.	Mouth to Paulina Lake	Temperature
Upper Deschutes Sub-basin		
Deschutes River	Lake Billy Chinook to Steelhead Falls	pH
	Steelhead Falls to North Unit Main Canal	Flow modification, pH, temperature
	North Unit Irrigation Canal to Central Oregon Canal	pH
	Central Oregon Canal to Little Deschutes River	DO, flow modification, habitat modification, sedimentation, turbidity
	Little Deschutes River to Wickiup Reservoir	DO, flow modification, habitat modification, sedimentation, turbidity
	Wickiup Reservoir to Crane Prairie	Temperature
Lake Creek	Mouth to Suttle Lake	Temperature
Odell Lake	Lake	pH
Squaw Creek	Alder Springs to Maxwell Ditch	Flow modification
Tumalo Creek	Mouth to Columbia Southern Canal	Flow modification
Lower Crooked Sub-basin		
Crooked River	Mouth to Baldwin Dam	Bacteria (fecal coliform), flow modification, pH, temperature
	Baldwin Dam to Prineville Reservoir	Total Dissolved Gas
McKay Creek	Mouth to Little McKay Creek	Temperature
Little McKay Creek	Mouth to headwaters	Temperature
Marks Creek	Mouth to headwaters	Temperature
Mill Creek (including East Fork and West Fork)	Mouth to headwaters	Temperature
Ochoco Creek	Mouth to Camp Branch	Temperature

Appendix B

Appendix B. Special Status Wildlife Species Inhabiting or Potentially Inhabiting the Upper Deschutes Planning Area

Common Name	Scientific Name	Federal/State Status[1]
Mammals		
Canada lynx	*Lynx canadensis*	T/--
Pacific fisher	*Martes pennanti pacifica*	SoC/SC
California wolverine	*Gulo gulo luteus*	SoC/T
Pygmy rabbit	*Brachylagus idahoensis*	SoC/SV
Preble's shrew	*Sorex preblei*	SoC/--
Fringed myotis	*Myotis thysanodes*	SoC/SV
Long-eared myotis	*Myotis evotis*	Soc/SU
Long-legged myotis	*Myotis volans*	SoC/SU
Silver-haired bat	*Lasionycteris noctivagans*	Soc/SU
Western small-footed myotis	*Myotis ciliolabrum*	SoC/SU
Townsend's big-eared bat	*Corynorhinus townsendii*	SoC/SC
Yuma myotis	*Myotis yumanensis*	Soc/--
California bighorn sheep	*Ovis canadensis californiana*	Soc/--
Amphibians		
Oregon spotted frog	*Rana pretiosa*	C/SC
Columbia spotted frog	*Rana luteiventris*	C/SU
Cascade frog	*Rana cascadae*	SoC/SV
Tailed frog	*Ascaphus truei*	Soc/SV
Northern leopard frog	*Rana pipiens*	–/SC
Reptiles		
Northern sagebrush lizard	*Sceloporus graciosus graciosus*	SoC/SV
Birds		
Bald eagle	*Haliaeetus leucocephalus*	T/T
American peregrine falcon	*Falco peregrinus anatum*	–/E
Northern goshawk	*Accipiter gentilis*	SoC/SC
Ferruginous hawk	*Buteo regalis*	SoC/SC
Northern spotted owl	*Strix occidentalis caurina*	T/T
Western burrowing owl	*Athene cunicularia hypugea*	SoC/SC
Flammulated owl	*Otus flammeolus*	–/SC
Western sage grouse	*Centrocercus urophasianus phaios*	SoC/SV
Mountain quail	*Oreortyx pictus*	Soc/SU
White-headed woodpecker	*Picoides albolarvatus*	Soc/SC
Black-backed woodpecker	*Picoides arcticus*	–/SC
Three-Toed woodpecker	*Picoides tridactylus*	–/SC
Lewis woodpecker	*Melanerpes americanus*	Soc/SC
Sage sparrow	*Amphispiza belli*	–/SC
Yellow-Billed Cuckoo	*Coccyzus americanus*	SoC/SC
Olive-sided flycatcher	*Contopus borealis*	SoC/SV
Willow flycatcher	*Empidonax trailii*	SoC/SU
Yellow rail	*Coturnicops noveboracensis*	SoC/SC
Upland Sandpiper	*Bartramia longicauda*	Soc/SC
Harlequin duck	*Histrionicus histrionicus*	SoC/SU

[1]Federal Status - T = Threatened; C = Candidate; SoC= Species of Concern.
State/ODFW Status - SoC = Species of Concern; SC = Critical; SV = Vulnerable; SU = Undetermined.
Source: ONHP 2001

Appendix C

Appendix C. Cultural Plants Occurring In and Around the Upper Deschutes Planning Area

Scientific Name	Common Name	Habitat
Allium species	Wild onion	Dry hillsides.
Amelanchier alnifolia	Serviceberry	Open woods; hillsides; riparian.
Apocynum cannabinum	Dogbane (Indian Hemp)	Wet hillsides; riparian.
Archilea millefelium	Yarrow	Sandy, lithic soils.
Artemesia tridentata	Sagebrush	Numerous.
Balsamorhiza species	Balsamroot	Dry hillsides.
Calochortus macrocarpus	Sego Lily or Mariposa Lily	Sagelands, volcanic soils.
Camassia quamash	Camas	Meadows; moist areas; riparian.
Cereoarpus ledifolius	Mountain Mahogany	Dry hillsides and ridge tops.
Cornus stolenifera	Red Osier Dogwood	Riparian
Elymus cinercus	Great Basin Wild Rye	Damper soils in sagelands.
Fritillaria pudica	Yellowbell	Lithic or sandy soils.
Juniperus occidentalis	Juniper	Hillsides, ridges, riparian.
Lewsisia redivia	Bitterroot	Lithic soils.
Lomatium canbyi	Canby's Desert Parsley	Lithic soils.
Lomatium cous	Biscuitroot	Lithic soils.
Lomatium macro	Gray-leaf Desert Parsley	Lithic soils.
Lomatium nuducauli	Desert Celery	Lithic soils.
Perideridia species	Yampah or Ipos	Meadows, grasslands, scabflats.
Prunus virginiana	Chokecherry	Moist areas.
Rosa species	Rosehips	Sunny openings, riparian, talus slopes.
Ribes species	Golden Currant, Rock Currant	Riparian, moist areas on hillsides.
Salix species	Willow	Riparian.
Sambucus canadensis	Elderberry	Riparian.

(Plants of cultural significance courtesy of The Burns Paiute Tribe and the Confederated Tribes of Warm Springs, Ordinance 68)

Appendix D

Appendix D. Livestock Grazing in the Upper Deschutes Planning Area

Allotment Name	Allotment Number	Management Goals[3]	Acres BLM	Forage Allocation[4]
A & L Sheep[2]	7502	M	6,260	1,012
Airport	5022	B	837	62
Alfalfa Market Road	5201	B	2,436	141
Allen	5115	B	3,554	110
Arnold Canal[2]	5206	BE	600	18
Barlow Cave	5208	AE	11,601	600
Barrett	5032	B	238	24
Blackrock[2]	5084	B	254	24
Broaddus-Carder[2]	5003	B	15	2
Brown	7504	M	525	93
Brown	5094	B	181	15
Bruckert	5110	B	126	35
Buckhorn Canyon	5076	B	580	68
Bull Flat[2]	5082	BE	116	7
Cain Fields	5107	B	114	36
Carey	5142	AC	1,129	46
Cliff	7509	M	940	88
Cline Butte	5073	GHJ	11,416	700
Cook	5111	B	1,860	49
Cooper	7514	B	455	27
Couch[2]	5024	B	768	30
Crenshaw	5116	BGJ	12,254	635
Cronin	5093	B	321	19
Davis	5136	B	5,024	352
Desert Springs[2]	5075	BJ	1,947	112
Dodds Road	5205	B	2,287	75
Driveway	5112	B	3,058	240
Dry Creek	5135	B	6,218	334
Dunham North[1]	5019	ACI	310	16
Dunham South	5228	ACI	2,120	163
Eagle Rock	5145	ACDE	2,565	162
Emmrich[2]	5006	B	107	20
F. Jones	5182	B	1,027	77
Finley	7595	M	813	72
Fisher[2]	5067	B	389	14
Foster	5096	B	200	24
Golden Horseshoe	5180	B	197	14
Gray Butte	5050	B	809	28
Grieve	5216	B	84	4
Griffith	7530	B	32	32
Grizzly Mountain[2]	5178	B	701	69
Hacker-Hassing	5113	B	4,019	99
Harsch[2]	5007	BEM	1,312	19
Haughton[1]	5234	ACDEFG	2,050	103
Helliwell	7536	B	360	60
Hogan[2]	7538	B	181	26
Hohnstein-Tatti	5109	B	5,096	262
Home Ranch	5078	GJ	4,147	193

Appendix D. Livestock Grazing in the Upper Deschutes Planning Area

Allotment Name	Allotment Number	Management Goals[3]	Acres BLM	Forage Allocation[4]
Horse Ridge	5210	AGEFIN	21,109	1,624
Howard	5122	B	640	68
Hudson	5261	ACDE	660	44
Hutton	5120	B	3,910	231
Kellems[2]	7574	M	170	34
Keystone East	5025	B	80	4
Keystone West	5024	B	280	10
Knoche	5089	B	185	6
Laire-gove[1]	5198	B	529	15
LaFollette Butte[2]	5070	B	3,295	190
Lamb	5004	B	63	6
Lava Beds	5209	BE	16,354	508
LeBeau	7594	B	23	6
Lone Pine Canyon	5086	B	120	5
Long Prairie	7597	M	690	240
Lower Bridge	5065	B	5,521	310
Lynch	5012	BE	2,806	83
Lytle Creek	5179	B	120	8
Maston	5080	BJ	3,382	209
Mayfield-Harris	5031	B	1,091	68
Mayfield Pond	5125	BK	4,549	305
McCabe[2]	5176	B	350	10
McDonald	5119	B	40	50
McWeizz[2]	5061	B	6,065	348
Meisner[2]	5252	B	124	34
Michaels	5207	BE	1,260	38
Millican	5212	AGJO	32,560	2,887
Miltenberger	0072	B	1,120	82
Miltenberger	7552	M	4,693	656
Montgomery	5088	B	160	17
Morgart	7554	B	80	11
Odin Falls[2]	5071	B	3,869	252
Oertle	5121	B	2,629	120
Paulus	5081	B	152	14
Pilot Butte[1]	5130	B	320	16
Pine Mountain	5211	BEF	5,323	320
Pine Ridge	5066	B	358	34
Pipeline	5117	B	8,227	513
Plateau	5138	AGJ	5,477	252
Poole	7559	M	1,358	180
Powell Butte	5127	ABIP	13,598	680
Rambo	5213	BHJ	15,997	670
Red Cloud	5092	B	596	33
Reynolds	5177	B	1,838	101
Salt Creek[1]	5140	ACDE	990	66
Sanowski	5002	B	40	10
Scott[1]	5233	AC	5,250	263
Sherwood Canyon	5051	B	1,117	51
Sinclair[2]	5204	B	470	28

Appendix D. Livestock Grazing in the Upper Deschutes Planning Area

Allotment Name	Allotment Number	Management Goals[3]	Acres BLM	Forage Allocation[4]
Smith, E.[2]	7571	B	170	26
Smith, W.	7572	B	41	7
Smith Rock	5052	B	174	9
Squaw Creek[2]	5069	B	192	17
Stearns	7575	M	270	73
Stearns North	5132	EG	8,867	403
Stearns South	5134	EG	9,540	583
Stevens Freemont[2]	5068	B	285	46
Struss[2]	5072	B	2,294	143
Webdell[1]	5256	ACDE	130	7
Weigand	5114	B	2,651	177
Weirleske	5018	BE	892	49
West Butte[1]	5231	ACFGIJ	13,166	1,784
Whisky Still	5079	BJ	1,327	100
Whitaker	5001	B	120	7
Williams	5064	B	763	44
Williams	7582	B	89	7
Williamson Creek	5214	AGIN	11,287	754
Yager	7586	M	420	33
Zell Pond	5108	B	1,228	75
Total Acres BLM in Grazing Allotments in the Planning Area			**335,177**	**22,465**
Total Acres BLM in Grazing Allotments in the Planning Area, but not grazed in 10+ years			**27,517**	
Total Acres BLM in Planning Area			**375,906**	
Total Acres in Planning Area, including all ownership			**885,883**	

[1]Only a portion of the allotment is within the planning area; acreage and forage data shown have been scaled down accordingly.

[2]The allotment has not been grazed in ten or more years.

[3]Allotment management goals:

- A Improve ecological condition
- B Maintain ecological condition
- C Stabilize or improve watershed condition
- D Improve riparian habitat
- E Maintain or improve winter range for mule deer and/or antelope
- F Maintain or improve sagegrouse habitat
- G Increase availability of livestock forage
- H Maintain scenic/natural qualities
- I Improve forage quality for livestock and wildlife
- J Maintain or improve habitat for mule deer and/or antelope
- K Maintain or improve waterfowl habitat
- L Maintain riparian habitat
- M Increase density of ground cover vegetation
- N Minimize conflicts between livestock and OHV use
- O Maintain WSA values
- P Maintain old growth juniper

[4]Forage allocation is shown in animal unit months (AUMs). An AUM is the amount of dry forage a cow and her calf eat in one month. So, ten cows with calves would eat 10 AUMs in one month, 20 AUMs in two, et cetera. All allotments are grazed by cattle, except Bruckert, Crenshaw, and Smith, W., which are grazed by horses or horses and cattle.

Appendix E

Appendix E. Existing Withdrawals

Agency	Location T. R. S.	Acreage	Purpose	Serial Number
BLM	T.19S., R.14E., Sec. 15 & 22	600	Western Juniper Natural Area	PLO 2956
BOR	T.17S., R. 16E., Sec. 1	1,120	Irrigation	‘43 Ochoco Reclamation Project
BOR	T.17S., R.16E., Sec. 12	40	Irrigation	53' Crooked River Reclamation Project
BOR	T.17S., R.16E., Sec. 10, 11, & 24	320	Irrigation	58' Crooked River Reclamation Project
BOR	T. 17S., R.17E., Sec. 3 & 4	840	Irrigation	‘43 Ochoco Reclamation Project
BOR	T. 17S., R.17E., Sec. 4	80	Irrigation	‘46 Prineville Reservoir Reclamation Project
BOR	T. 17S., R.17E., Sec. 9, 10, & 19	320	Irrigation	53' Crooked River Reclamation Project
BOR	T.17S., R.17E., Sec. 9	40	Irrigation	58' Crooked River Reclamation Project
BOR	T.17S., R.17E., Sec. 9	40	Irrigation	PLO 2829 Crooked River
BOR	T.16., R.17E., Sec. 31, 32, & 33	360	Irrigation	‘43 Ochoco Reclamation Project
BOR	T.16S., R.17E., Sec. 24, 23, 26, 27, 28, 31, & 32	520	Irrigation	53' Crooked River Reclamation Project

Appendix E. Existing Withdrawals

Agency	Location T. R. S.	Acreage	Purpose	Serial Number
BOR	T.16S., R.17E., Sec. 24, 31, & 34	200	Irrigation	58' Crooked River Reclamation Project
BOR	T.16S., R.17E., Sec. 34	80	Irrigation	PLO 2829 Crooked River
BPA	T.15S., R.13E., Sec. 18	40	Electric Substation Site	OR 01989 PLO 821
City of Redmond	T.14S., R.12E, Sec. 24	160	R&PP: Water Facility	OR 054445
COSSA	T.19S., R.15E., Sec. 28, 29, & 33	500	R&PP: Shooting Range	OR 48823
FAA	T.15S., R.13E., Sec. 21	120	Radio Signal Site	PLO2141
FERC	T.13S, R.12E., Sec. 3, 4, 9, 10, 11, 13, & 14	440	Power Site	Res 425
FERC	T.13S, R.12E., Sec. 28 & 33	100	Power Site	Res 480
FERC	T.13S.,R.12E, Sec. 27	40	Power Site	Res 25
FERC	T.13S., R.12E., Sec. 5, 6, 7, 8, 17, 20, 21, 27, 28, 33, & 34	1,685	Power Site	Res 26
FERC	T.12S., R.12E., Sec. 32	280	Power Site	Res 26
FERC	T.12S., R.12E., Sec. 33	120	Power Site	Res 63
FERC	T.15S., R.12E., Sec. 1 & 12	320	Power Site	Res 26
FERC	T.14S., R.12E., Sec. 9, 10, 11, 14, 26, & 35	560	Power Site	Res 26

Appendix E. Existing Withdrawals

Agency	Location T. R. S.	Acreage	Purpose	Serial Number
FERC	T.19S., R.17E., Sec. 12	120	Power Site	Res 64 OR 9629
Military	T.18S., R.13E., Sec. 11	160	Training	OR 39055
Military	T.15S., R.14E., Sec. 31	76	Training	OR 39055
Oregon State Parks	T.14S., R.17E., Sec. 32	40	R&PP: Public Recreation Area: Fishing	OR 6091 OR 03888 PLO 1286
Local Park	T.14S., R.16E., Sec. 28	160	P&PP: Local Park	OR 11369
	Total Acres	9,481		

Appendix F

Appendix F. Public Lands Available for Disposal in Brothers/La Pine RMP[1]

Crook County		
Parcels	**Legal Description**	**Acreage**
	T.13S., R.15E. W.M., Oregon	
	Section 3: NW¼SW¼;	40
	15: NW¼NW¼, N½SW¼;	120
	24: SE¼SW¼, SW¼SE¼, E½E½;	240
	25: W½SW¼, NE¼NW¼, W½NE¼;	200
	26: E½SW¼, SE¼NE¼, SE¼;	280
	27: NW¼NE¼	40
	28: SE¼SW¼, SE¼;	200
	32: NW¼NE¼.	40
	T.13S., R.16E. W.M., Oregon	
	Section 19: Lot 3, NE¼SW¼, NE¼NW¼, NE¼;	280
	20: S½S½, S½N½, NW¼SW¼;	360
	21: SW¼NW¼, N½NE¼, SE¼NE¼,NE¼SE¼;	200
	29: SW¼, NE¼NW¼, NW¼NE¼;	240
	30: SE¼;	160
	32: W½.	320
	T.14S., R.14E. W.M., Oregon	
	Section 5: SW/14NW¼, NW¼ SW¼;	80
	9: E½SE¼;	80
	10: SE¼NE¼;	40
	24: N½N½, SW¼,NW¼.	200
	T.14S., R.15E. W.M., Oregon	
	Section 18: N½SE¼, S½NE¼;	160
	30: N½NE¼, S½SE¼	80
	T.14S., R.16E. W.M., Oregon	
	Section 1: Lots 1-3, S½NE¼, SE¼;	320
	12: E½, SW¼NW¼;	520
	14: SE¼SE¼, N½N½, W½SW¼,SW¼NW¼;	320
	22: NE¼NE¼;	40
	28: NE¼SW¼, NW¼,SE¼, S½SE¼.	160

Appendix F. Public Lands Available for Disposal in Brothers/La Pine RMP[1]

Crook County		
Parcels	**Legal Description**	**Acreage**
	T.14S., R.17E., W.M., Oregon	
	Section 26: NW¼SE¼;	40
	34: NW¼NW¼.	40
	T.15S., R.15E., W.M., Oregon	
	Section 31: S½SW¼.	80
	T.15S., R.16E., W.M., Oregon	
	Section 2: SE½, SE¼SW¼;	200
	10: NE¼NE¼;	40
	14: E½SE¼, SW¼NE¼, SE¼NW¼;	160
	22: E½;	320
	26: N½N½;	160
	30: SW¼NE¼; SE¼SW¼, W½SE¼, SE¼SE¼;	200
	32: NW¼NE¼, NW¼, N½SW¼, SW¼SW¼.	320
	T.15S., R.17E., W.M., Oregon	
	Section 2: Lot 2;	40
	12: SE¼SW¼, SW¼SE¼;	80
	14: N½SW¼, SW¼SW¼;	120
	18: Lot 4;	40
	20: W½SW¼, SW¼NW¼;	120
	24: NE¼NE¼;	40
	28: All;	640
	32: All;	640
	34: W½NW¼, S½.	400
	T.15S., R.18E., W.M., Oregon	
	Section 6: S½SE¼;	80
	8: N½NE¼, W½NW¼;	160
	18: NE¼SW¼.	40

Appendix F. Public Lands Available for Disposal in Brothers/La Pine RMP[1]

Crook County		
Parcels	**Legal Description**	**Acreage**
	T.16S., R.16E., W.M., Oregon	
	Section 2: Lot 1;	40
	4: Lots 1-3, SE¼NE¼;	160
	6: Lot 5, NW¼SE¼, SE¼SE¼;	120
	12: SE¼NE¼;	40
	13: S½SE½;	80
	21: NE¼, E½NW¼, NE¼SW¼, NE¼SE¼;	320
	22: SW¼SW¼;	40
	23: E½SW¼, SW¼NE¼, NE¼NW¼;	160
	24: S½SE¼;	80
	26: SE¼SE¼, N½SE¼, NE¼SW¼, E½NW¼, NE¼;	400
	27: SE¼SW¼, E½NE¼;	120
	28: E½NW¼, E½SW¼, NW¼SE¼, S½SE¼.	280
	T.16S., R.17E., W.M., Oregon	
	Section 4: NW¼, NW¼;	40
	6: E½, W½NW¼;	400
	7: NE¼, NE¼NW¼, S½NW¼, SW¼,N½SE¼;	520
	8: N½, N½S½;	480
	9: All;	640
	15: N½, NW¼,SW¼, SE¼SE¼;	400
	16: NE¼, S½NW¼;	240
	17: W½SW¼;	80
	18: NW¼, SE¼SW¼, NE¼SE¼, S½SE¼.	320
	Total Acres	13,640

Appendix F. Public Lands Available for Disposal in Brothers/La Pine RMP[1]

Deschutes County		
Parcels	**Legal Description**	**Acreage**
Bend/ Redmond Area	T.14S., R.12E., W.M., Oregon Section 22: NE¼NE¼, SW¼NE¼,W½ W½, SE¼SW¼, W½SE¼; 27: N½NW¼, SW¼NW¼; 34: N½SW¼, SW¼SW¼, E½ SE¼; 35: SE¼SW¼, SE½.	 360 120 200 200
	T.14S., R.13E., W.M., Oregon Section 29: Lot 1, Lot 4, SW¼NE¼, NE¼NW¼, E½SE¼; 30: Lot 6, SW¼NE¼NW¼, W½SE¼NW¼, W½NE¼SW¼, SE¼SW¼; 31: E½ W½.	 205 110 160
	T.15S., R.12E., W.M., Oregon Section 1: SE¼NW¼; 2: SW¼NE¼, N½SW¼, SW¼SW¼; 3: SE¼NW¼, N½SE¼; 10: SW¼SW¼; 11: NW¼NW¼.	 40 160 120 40 40
	T.15S., R.13E., W.M., Oregon Section 15: Lots 3, Lot 7, NE¼, NE¼SW¼; 21: E½SE¼SW¼, W½SW¼SE¼; 23: E½SE¼; 26: NE¼NE¼, SW¼NW¼NE¼, S½NE¼, S½; 32: NE¼, SW¼NW¼, NE¼SW¼, S½SW¼, SE¼; 33: All; 34: All; 35: All.	 255 40 80 450 480 640 640 640
	T.16S., R.12E., W.M., Oregon Section 11: SW¼SE¼; 34: NW¼SE¼.	 40 40

Appendix F. Public Lands Available for Disposal in Brothers/La Pine RMP[1]

Deschutes County		
Parcels	**Legal Description**	**Acreage**
	T.16S., R.13E., W.M., Oregon Section 4: All; 5: All; 6: E½, SE¼SW¼; 7: E½, E½W½, Lots 2-4; 8: All.	 360 360 220 600 640
La Pine Area	T.21S., R.19E., W.M., Oregon Section 17: S½NE¼.	80
	T.21S., R.10E., W.M., Oregon Section 21: NE¼; 22: N½NE¼; 26: NE¼NW¼; 33: W½SE¼; 34: SW¼SE¼, E½SE¼.	 160 80 40 80 120
	T.21S., R.11E., W.M., Oregon Section 29: SW¼SW¼.	40
	T.22S., R.10E., W.M., Oregon Section 3: Lots 1-2; 5: N½SE¼; 34: SE¼NE¼	 80 80 40
	Total Acres	8,080
Klamath County		
Parcels	**Legal Description**	**Acreage**
	T.23S., R.10E., W.M., Oregon Section 5: Lot 2.	40
	Total Acres	40
	Total All	21,760

[1]Lands as shown on Master Title Plats.

Appendix G

Appendix G. Jurisdictional and Population Relationships and Relationships to other Plans*

Jurisdictional Relationships

The following government or quasi-governmental entities have some legal jurisdiction within the prescribed planning area boundaries, and may be involved in Consultation, Collaboration, or Cooperative decisions.

Federally Recognized Indian Tribes

- Confederated Tribes of the Warm Springs
- Klamath Tribe
- Burns-Paiute Tribes

Federal Agencies

- Deschutes and Ochoco National Forests and the Crooked River National Grasslands.
- Bureau of Reclamation
- Bonneville Power Administration
- US Fish and Wildlife
- National Marine Fisheries
- National Resource and Conservation Service
- US Property and Finance Office
- US Army Corps of Engineers

Oregon State Agencies

- Department of Fish and Wildlife
- Parks and Recreation Department
- Division of State Lands
- Department of Transportation
- Department of Land Conservation and Development
- Department of Forestry
- Oregon Military Department

Local Governments

- Deschutes, Jefferson, Crook, and Klamath Counties
- Cities of Redmond and Prineville
  (Bend, Sisters, Madras are outside of planning area)
- Department of Environmental Health
- Land Use Planning Department
- Road Department
- Zoning
- OSU Extension Service
- Weed Control

Quasi-Governmental Organizations

- Deschutes Provincial Advisory Committee
- Watershed Councils
- Upper Deschutes, Crooked River Irrigation Districts
- North Unit, Central Oregon, Tumalo, Squaw Creek
- Rural Road, Fire and Sewer Districts

Appendix G. Jurisdictional and Population Relationships and Relationships to other Plans*(cont.)

Quasi-Governmental Organizations (cont.)

- Deschutes Rural Fire Protection District #1 and District # 2, Crescent Rural, Sunriver Fire Department, Walker Range (Crown Pacific), Fend Fire Department, Cloverdale Rural Fire Protection, Redmond Fire Department, Sisters/Camp Sherman Rural, Black Butte Ranch Rural,Jefferson County #1 Rural, Prineville Fire Department, Warm Springs Fire and Safety. Crooked River Ranch Rural Fire Protection District, La Pine Rural Fire Protection District, La Pine Special Sewer District, Redmond Sewer District, Bend Sewer District
- Electric Utilities
  Central Electric Cooperative, Midstate Electric, Pacific Power and Light
- Airports
  Cities of Redmond and Bend Municipal Airports
- Park Districts
  Central Oregon Parks and Recreation District, La Pine Parks and Recreation District, Crook County Parks and Recreation District, Bend Metro Park District
- Community Action Teams
- La Pine, Sisters

Population Relationships

- User Groups and Interested and Affected Non Government Organizations
- Commercial and Development Interest
- Residents and adjacent landowners

Relationship to Other Plans or Assessments

Within or adjacent to the planning area, a number of other non-BLM comprehensive or management plans exist that may have overlapping areas of consideration. Some of these plans are being updated concurrently with this management plan. This section lists plans that will be considered within the context of the Upper Deschutes Resource Management Plan.

- Upper Deschutes Water Quality Monitoring Framework
- Watershed Council Watershed Assessments in the Little and Upper Deschutes basins
- FERC Re-licensing - Pelton/Round Butte Dams
- Upper Deschutes, Middle Deschutes, Upper Crooked River Wild and Scenic River Plans
- Deschutes, Crook and Jefferson County Comprehensive Land Use Plans
- Bend, Sisters, Prineville Comprehensive Land Use Plans
- Redmond Comprehensive Land Use Plan Update
- Oregon Military Department Integrated Natural Resource Management Plan for the Central Oregon Training Site
- Cline Falls and and La Pine State Recreation Area Management Plans
- Prineville Reservoir Resource Management and State Park Master Plan
- ODOT 1999 Oregon Highway Plan -
- Interior Columbia Basin Ecosystem Management Project

*There are a number of interested and affected government agencies, groups, and individuals in the Upper Deschutes Resource Management Plan. A brief description, though not comprehensive, is included here.

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